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IS 5531 (1988): Cast iron specials for asbestos-cement pressure pipes for water, gas and sewage [MTD 6: Pig iron and Cast Iron]



“ज्ञान से एक नये भारत का निर्माण”

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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*

**SPECIFICATION FOR  
CAST IRON SPECIALS FOR ASBESTOS  
CEMENT PRESSURE PIPES FOR WATER,  
GAS AND SEWAGE**

*( Second Revision )*

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First Reprint OCTOBER 1990

UDC 621·643·4·06 [ 669·13 ] : 621·643·2·986 [ 666·961 ] : 628·1/3

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**BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BHADUR SHAH ZAFAR MARG  
NEW DELHI 110002**

*Indian Standard*

**SPECIFICATION FOR  
CAST IRON SPECIALS FOR ASBESTOS  
CEMENT PRESSURE PIPES FOR WATER,  
GAS AND SEWAGE**

*( Second Revision )*

**0. FOREWORD**

**0.1** This Indian Standard was adopted by the Bureau of Indian Standards on 5 August 1988, after the draft finalized by the Pig Iron and Cast Iron Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** This standard was first published in 1969 and subsequently revised in 1977. In this revision, following major modifications have been effected:

- a) series for all the cast iron specials have been extended from the present DN 300 to DN 600.
- b) Additional classes 20 and 25 have been added for all the series.
- c) In addition to 90°, 45° and 22½° cast iron plain end bends, 11¼° bend has been added.

**0.3** Cast iron specials to be used with asbestos cement pressure pipes may have flanged or plain ends. In case of plain ends, cast iron detachable joints or asbestos cement couplings may be used with them.

**0.4** Whereas requirements of cast iron specials for use with AC pressure pipes conforming to IS : 1592-1980\* have been covered in this standard, the same for use with AC pipes ( light duty ) conforming to IS : 9627-1980† are being covered in a separate standard.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

\*Specification for asbestos cement pressure pipes ( *second revision* ).

†Specification for asbestos cement pressure pipes ( *light duty* ).

‡Rules for rounding off numerical values ( *revised* ).

**1. SCOPE**

**1.1** This standard covers the requirements for cast iron specials to be used with asbestos cement pressure pipes for water, gas and sewage.

**1.1.1** This standard is applicable to cast iron specials for use with asbestos cement pressure pipes suitable for connection with cast iron detachable joints or asbestos cement couplings.

**2. SUPPLY OF MATERIAL**

**2.1** The general requirements relating to the supply of the materials shall be as laid down in IS : 1387-1967\*.

**3. MANUFACTURE**

**3.1** The metal used for the manufacture of the specials shall be of requisite quality conforming

\*General requirements for the supply of metallurgical materials ( *first revision* ).

to any of the grade specified in IS : 210-1978\*.

**3.2** The castings shall be stripped with all precautions necessary to avoid warping or shrinking defects. The castings shall be free from defects other than any unavoidable surface imperfections which result from the method of manufacture and which do not affect the use of the specials. By agreement between the purchaser and the manufacturer, minor defects may be rectified.

**3.3** In the case of flanged joints, the flanges shall be at right angle to the axis of the joint. The bolt holes shall be drilled.

**3.4** The casting shall be such that they could be cut, drilled or machined with the tools normally used for installation. In case of dispute, the castings may be accepted provided the hardness of the external unmachined surface does not exceed 215 HBS.

\*Specification for grey iron casting ( *third revision* ).

#### 4. MECHANICAL TESTS

**4.0 Mechanical tests** shall be carried out during manufacture. Two tests per day of casting may be adequate. The results obtained are taken to represent all the castings of all sizes made during the day.

**4.1 Tensile Test** — Two tensile tests shall be made on bars cast from the same metal as specified in Appendix A. The results of the tests shall show a minimum tensile strength of 150 MPa.

**4.2 Brinell Hardness Test** — For checking the Brinell hardness specified in 3.4, tests shall be carried out on the test bars used for the tests in 4.1 in accordance with IS : 1500-1983\*.

**4.3 Retest** — If any test piece representing a lot fails to pass the test in the first instance, two additional tests shall be made on test pieces made from the same metal used for the same lot. Should any of these additional test pieces fail to pass the test, the lot shall be deemed as not complying with the standard.

#### 5. HYDROSTATIC TEST

**5.1** For hydrostatic test, the specials shall be kept under pressure (see 5.1.1) for a period of minimum 15 seconds and may be struck moderately with a 700-g hammer. They shall withstand the pressure test without showing any leakage, sweating or other defects of any kind. The hydrostatic test shall be conducted before coating the castings.

**5.1.1** The specials shall withstand the test pressure specified in Table 1 of IS : 1592-1980† for the class of asbestos cement pressure pipes with which they are to be used.

**5.1.2** When the specials are required for higher pressures, the test pressure are subject to agreement between the purchaser and the manufacturer.

#### 6. DIMENSIONS AND MASS

**6.1** The dimensions and mass of the specials shall be as specified in Tables 1 to 10.

NOTE 1 — Mass of specials has been worked out assuming density of cast iron as 7.15 kg/dm<sup>3</sup>.

NOTE 2 — Nominal diameter of a cast iron special shall refer to the corresponding nominal diameter of the AC pressure pipe.

NOTE 3 — Cast iron specials for nominal dia more than 600 mm may also be manufactured. In such cases, detailed dimensions may be as mutually agreed between the purchaser and the supplier.

\*Method for Brinell hardness test for metallic materials (second revision).

†Specification for cement pressure pipes (second revision).

**6.1.1** Specials of a mass heavier than the maximum specified may be accepted provided they comply in every other respect with the requirements of this standard.

**6.2** The outside diameter of the engagement end of a special shall match the corresponding outside diameter of the asbestos cement pressure pipe of different classes conforming to IS : 1592-1980\*.

**6.3** The engagement length shall be not less than 90 mm.

#### 7. TOLERANCES ON DIMENSIONS AND MASS

**7.1 Thickness** — Tolerances on the wall thickness and flange thickness of the specials shall be as follows :

| Dimension             | Tolerance                                   |
|-----------------------|---|
| Wall thickness, $e$   | $-(2.00 \text{ mm} + 0.05 e)$<br>(see Note) |
| Flange thickness, $b$ | $\pm (3.00 \text{ mm} + 0.05 b)$            |

where

$e$  = standard thickness of the wall in mm, and

$b$  = standard thickness of the flange in mm.

NOTE — No limit for the plus tolerances is specified.

**7.2 Other Dimensions** — Tolerances on other dimensions shall be as under :

| Dimension   | Tolerance<br>mm |
|---|-----------------|
| Machined outside diameters<br>( $D_2$ and $d_2$ ) | +1.5<br>-1.0    |
| Length ( $l$ ) and height ( $h$ )                 | +15<br>-10      |

**7.3 Mass** — Tolerance on the mass of the specials shall be  $\pm 8$  percent except for bends and fittings with more than one branch and non-standard fittings, where it shall be  $\pm 12$  percent.

#### 8. COATING

**8.0** After inspection and hydrostatic test, each casting shall be coated as specified in 8.1 to 8.6.

**8.1** Coating shall not be applied to any castings, unless its surface is clean, dry and free from rust.

**8.2** Unless otherwise agreed to between the purchaser and the manufacturer, all castings shall be coated externally and internally with the same

\*Specification for asbestos cement pressure pipes (second revision)

material, the castings being preheated prior to total immersion in a bath containing a uniformly heated composition having a bituminous tar or other suitable base.

NOTE — For specials used for carrying potable water, coal tar should not be used.

8.2.1 Alternatively, the coating on the castings may be done without preheating with two coats of black Japan conforming to Type 3 of IS : 341-1973\*, if agreed to at the time of enquiry and order.

\*Specification for black Japan, Types A, B and C (first revision).

8.3 The coating material shall set rapidly with good adherence and shall not scale off.

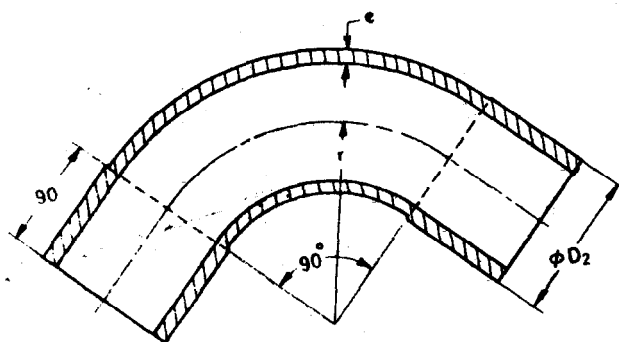
8.4 In all instances, where the coating material has a bituminous or similar base, it shall be smooth and tenacious, and hard enough not to flow when exposed to a temperature of 65°C but not so brittle at a temperature of 0°C as to chip off when scribed lightly with a penknife.

8.5 Then the specials are to be used for conveying potable water, the inside coating shall not contain any constituent soluble in such water or any ingredient which could impart any taste or odour whatsoever to the potable water after sterilization and suitably washing of the mains.

TABLE 1 DIMENSIONS AND MASS OF CAST IRON PLAIN-END BENDS (90°)

( Clause 6.1 )

All dimensions in millimetres.



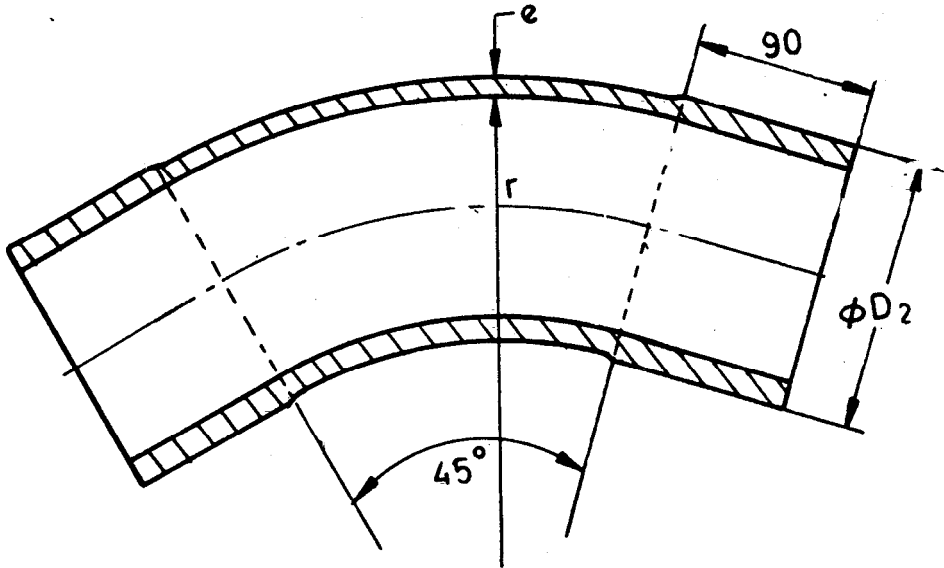
$D_2$  = machined outside diameter of asbestos-cement pressure pipe

| NOMINAL DIAMETER DN | CLASS | FINISH OD $D_2$ | BARREL WALL THICKNESS $e$ | RADIUS $r$ | NOMINAL MASS kg | NOMINAL DIAMETER DN | CLASS | FINISH OD $D_2$ | BARREL WALL THICKNESS $e$ | RADIUS $r$ | NOMINAL MASS kg |
|---------------------|-------|-----------------|---------------------------|------------|-----------------|---------------------|-------|-----------------|---------------------------|------------|-----------------|
| (1)                 | (2)   | (3)             | (4)                       | (5)        | (6)             | (1)                 | (2)   | (3)             | (4)                       | (5)        | (6)             |
| 80                  | 5, 10 | 99.5            | 8.6                       | 137        | 7.60            | 300                 | 5     | 322.5           | 13.0                      | 335        | 65.4            |
|                     | 15    | 99.5            | 8.6                       | 137        | 7.60            |                     | 10    | 328.5           | 13.0                      | 335        | 69.5            |
|                     | 20    | 101.5           | 10.0                      | 137        | 8.70            |                     | 15    | 340.5           | 13.0                      | 335        | 78.0            |
|                     | 25    | 106.5           | 10.0                      | 137        | 9.80            |                     | 20    | 352.5           | 15.2                      | 335        | 95.8            |
| 100                 | 5, 10 | 120.0           | 9.0                       | 155        | 10.3            |                     | 25    | 366.5           | 15.2                      | 335        | 106             |
|                     | 15    | 121.0           | 9.0                       | 155        | 10.6            | 350                 | 5, 10 | 379.5           | 14.0                      | 380        | 94.6            |
|                     | 20    | 126.5           | 10.5                      | 155        | 13.0            |                     | 15    | 392.0           | 14.0                      | 380        | 105             |
|                     | 25    | 132.5           | 10.5                      | 155        | 14.7            |                     | 20    | 405.0           | 16.3                      | 380        | 128             |
| 125                 | 5, 10 | 145.0           | 9.5                       | 177.5      | 14.1            |                     | 25    | 419.0           | 17.9                      | 380        | 149             |
|                     | 15    | 147.0           | 9.5                       | 177.5      | 14.8            | 400                 | 5, 10 | 432.0           | 15.0                      | 425        | 126             |
|                     | 20    | 152.5           | 11.1                      | 177.5      | 18.0            |                     | 15    | 448.0           | 15.0                      | 425        | 141             |
|                     | 25    | 159.5           | 11.1                      | 177.5      | 20.4            |                     | 20    | 463.0           | 17.5                      | 425        | 173             |
| 150                 | 5, 10 | 171.0           | 10.0                      | 200        | 19.0            |                     | 25    | 478.0           | 19.3                      | 425        | 200             |
|                     | 15    | 176.5           | 10.0                      | 200        | 21.0            | 450                 | 5, 10 | 482.0           | 16.0                      | 470        | 162             |
|                     | 20    | 183.0           | 11.7                      | 200        | 25.7            |                     | 15    | 498.0           | 16.0                      | 470        | 178             |
|                     | 25    | 191.0           | 11.7                      | 200        | 28.9            |                     | 20    | 515.0           | 18.7                      | 470        | 219             |
| 200                 | 5     | 221.0           | 11.0                      | 245        | 30.5            |                     | 25    | 532.0           | 20.6                      | 470        | 254             |
|                     | 10    | 225.0           | 11.0                      | 245        | 32.5            | 500                 | 5, 10 | 536.5           | 17.0                      | 515        | 208             |
|                     | 15    | 233.5           | 11.0                      | 245        | 36.5            |                     | 15    | 554.5           | 17.0                      | 515        | 229             |
|                     | 20    | 242.5           | 12.8                      | 245        | 44.7            |                     | 20    | 572.5           | 19.8                      | 515        | 279             |
|                     | 25    | 253.5           | 12.8                      | 245        | 50.5            |                     | 25    | 591.5           | 21.8                      | 515        | 323             |
| 250                 | 5     | 271.0           | 12.0                      | 290        | 45.4            | 600                 | 5, 10 | 643.5           | 19.0                      | 605        | 321             |
|                     | 10    | 276.5           | 12.0                      | 290        | 48.6            |                     | 15    | 665.5           | 19.0                      | 605        | 352             |
|                     | 15    | 284.5           | 12.0                      | 290        | 53.4            |                     | 20    | 686.5           | 22.2                      | 605        | 428             |
|                     | 20    | 294.5           | 14.0                      | 290        | 65.4            |                     | 25    | 710.5           | 24.4                      | 605        | 495             |
|                     | 25    | 305.5           | 14.0                      | 290        | 72.4            |                     |       |                 |                           |            |                 |

TABLE 2 DIMENSIONS AND MASS OF CAST IRON PLAIN-END BENDS (45°)

( Clause 6.1 )

All dimensions in millimetres.



$D_2$  = machined outside diameter of asbestos-cement pressure pipe.

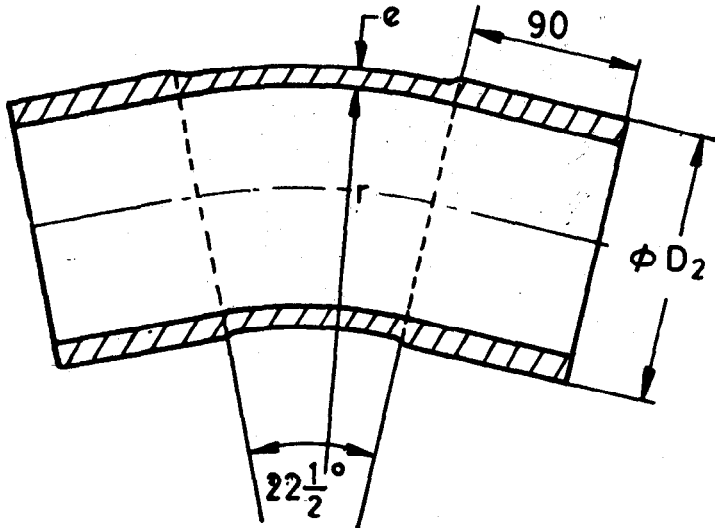
| NOMINAL DIAMETER DN | CLASS | FINISH O D $D_2$ | BARR WALL THICKNESS $e$ | RADIUS $r$ | NOMI-NAL MASS kg | NOMINAL DIAMETER DN | CLASS | FINISH OD $D_2$ | BARREL WALL THICKNESS $e$ | RADIUS $r$ | NOMI-NAL MASS kg |
|---------------------|-------|------------------|-------------------------|------------|------------------|---------------------|-------|-----------------|---------------------------|------------|------------------|
| (1)                 | (2)   | (3)              | (4)                     | (5)        | (6)              | (1)                 | (2)   | (3)             | (4)                       | (5)        | (6)              |
| 80                  | 5, 10 | 99.5             | 8.6                     | 280        | 7.70             | 300                 | 5     | 322.5           | 13.0                      | 500        | 52.6             |
|                     | 15    | 99.5             | 8.6                     | 280        | 7.70             |                     | 10    | 328.5           | 13.0                      | 500        | 56.7             |
|                     | 20    | 101.5            | 10.0                    | 280        | 8.80             |                     | 15    | 340.5           | 13.0                      | 500        | 65.2             |
|                     | 25    | 106.5            | 10.0                    | 280        | 9.90             |                     | 20    | 352.5           | 15.2                      | 500        | 80.7             |
| 100                 | 5, 10 | 120.0            | 9.0                     | 300        | 10.0             | 350                 | 25    | 366.5           | 15.2                      | 500        | 91.4             |
|                     | 15    | 121.0            | 9.0                     | 300        | 10.4             |                     | 5, 10 | 379.5           | 14.0                      | 550        | 74.8             |
|                     | 20    | 126.5            | 10.5                    | 300        | 12.8             |                     | 15    | 392.0           | 14.0                      | 550        | 85.0             |
|                     | 25    | 132.5            | 10.5                    | 300        | 14.5             |                     | 20    | 405.0           | 16.3                      | 550        | 105              |
| 125                 | 5, 10 | 145.0            | 9.5                     | 325        | 13.4             | 400                 | 25    | 419.0           | 17.9                      | 550        | 123              |
|                     | 15    | 147.0            | 9.5                     | 325        | 14.0             |                     | 5, 10 | 432.0           | 15.0                      | 600        | 98               |
|                     | 20    | 152.5            | 11.1                    | 325        | 17.2             |                     | 15    | 448.0           | 15.0                      | 600        | 112              |
|                     | 25    | 159.5            | 11.1                    | 325        | 19.5             |                     | 20    | 463.0           | 17.5                      | 600        | 139              |
| 150                 | 5, 10 | 171.0            | 10.0                    | 350        | 17.5             | 450                 | 25    | 478.0           | 19.3                      | 600        | 163              |
|                     | 15    | 176.5            | 10.0                    | 350        | 19.6             |                     | 5, 10 | 482.0           | 16.0                      | 650        | 121              |
|                     | 20    | 183.0            | 11.7                    | 350        | 23.9             |                     | 15    | 498.0           | 16.0                      | 650        | 138              |
|                     | 25    | 191.0            | 11.7                    | 350        | 27.1             |                     | 20    | 515.0           | 18.7                      | 650        | 172              |
| 200                 | 5     | 221.0            | 11.0                    | 400        | 26.6             | 500                 | 25    | 532.0           | 20.6                      | 650        | 202              |
|                     | 10    | 225.0            | 11.0                    | 400        | 27.5             |                     | 5, 10 | 536.5           | 17.0                      | 700        | 154              |
|                     | 15    | 233.5            | 11.0                    | 400        | 32.6             |                     | 15    | 554.5           | 17.0                      | 700        | 175              |
|                     | 20    | 242.5            | 12.8                    | 400        | 40.2             |                     | 20    | 572.5           | 19.8                      | 700        | 216              |
| 250                 | 5     | 271.0            | 12.0                    | 450        | 37.8             | 600                 | 25    | 591.5           | 21.8                      | 700        | 254              |
|                     | 10    | 276.5            | 12.0                    | 450        | 41.0             |                     | 5, 10 | 643.5           | 19.0                      | 800        | 232              |
|                     | 15    | 284.5            | 12.0                    | 450        | 45.8             |                     | 15    | 665.5           | 19.0                      | 800        | 262              |
|                     | 20    | 294.5            | 14.0                    | 450        | 56.5             |                     | 20    | 686.5           | 22.2                      | 800        | 323              |
|                     | 25    | 305.5            | 14.0                    | 450        | 63.5             | 25                  | 710.5 | 24.4            | 800                       | 380        |                  |



TABLE 3 DIMENSIONS AND MASS OF CAST IRON PLAIN-END BENDS (22½°)

( Clause 6.1 )

All dimensions in millimetres.

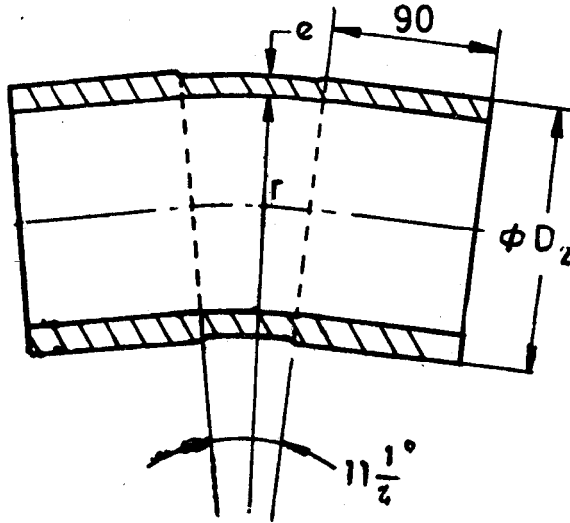
 $D_2$  = machined outside diameter of asbestos-cement pressure pipe.

| NOMINAL DIAMETER DN | CLASS | FINISH OD $D_2$ | BARREL WALL THICKNESS $e$ | RADIUS $r$ | NOMINAL MASS kg | NOMINAL DIAMETER DN | CLASS | FINISH OD $D_2$ | BARREL WALL THICKNESS $e$ | RADIUS $r$ | NOMINAL MASS kg |
|---------------------|-------|-----------------|---------------------------|------------|-----------------|---------------------|-------|-----------------|---------------------------|------------|-----------------|
| (1)                 | (2)   | (3)             | (4)                       | (5)        | (6)             | (1)                 | (2)   | (3)             | (4)                       | (5)        | (6)             |
| 80                  | 5, 10 | 99.5            | 8.6                       | 280        | 5.70            | 300                 | 5     | 322.5           | 13.0                      | 500        | 33.7            |
|                     | 15    | 99.5            | 8.6                       | 280        | 5.70            |                     | 10    | 328.5           | 13.0                      | 500        | 37.9            |
|                     | 20    | 101.5           | 10.0                      | 280        | 6.50            |                     | 15    | 340.5           | 13.0                      | 500        | 46.4            |
|                     | 25    | 106.5           | 10.0                      | 280        | 7.60            |                     | 20    | 352.5           | 15.2                      | 500        | 58.5            |
| 100                 | 5, 10 | 120.0           | 9.0                       | 300        | 7.40            | 350                 | 25    | 366.5           | 15.2                      | 500        | 69.2            |
|                     | 15    | 121.0           | 9.0                       | 300        | 7.70            |                     | 5, 10 | 379.5           | 14.0                      | 550        | 48.8            |
|                     | 20    | 126.5           | 10.5                      | 300        | 9.60            |                     | 15    | 392.0           | 14.0                      | 550        | 59.0            |
|                     | 25    | 132.5           | 10.5                      | 300        | 11.2            |                     | 20    | 405.0           | 16.3                      | 550        | 74.5            |
| 125                 | 5, 10 | 145.0           | 9.5                       | 325        | 9.6             | 400                 | 25    | 419.0           | 17.9                      | 550        | 89.9            |
|                     | 15    | 147.0           | 9.5                       | 325        | 10.2            |                     | 5, 10 | 432.0           | 15.0                      | 600        | 62.9            |
|                     | 20    | 152.5           | 11.1                      | 325        | 12.7            |                     | 15    | 448.0           | 15.0                      | 600        | 77.8            |
|                     | 25    | 159.5           | 11.1                      | 325        | 15.0            |                     | 20    | 463.0           | 17.5                      | 600        | 98.3            |
| 150                 | 5, 10 | 171.0           | 10.0                      | 350        | 12.3            | 450                 | 25    | 478.0           | 19.3                      | 600        | 118             |
|                     | 15    | 176.5           | 10.0                      | 350        | 14.4            |                     | 5, 10 | 482.0           | 16.0                      | 650        | 76.6            |
|                     | 20    | 183.0           | 11.7                      | 350        | 17.8            |                     | 15    | 498.0           | 16.0                      | 650        | 93.2            |
|                     | 25    | 191.0           | 11.7                      | 350        | 21.0            |                     | 20    | 515.0           | 18.7                      | 650        | 119             |
| 200                 | 5     | 221.0           | 11.0                      | 400        | 18.0            | 500                 | 25    | 532.0           | 20.6                      | 650        | 144             |
|                     | 10    | 225.0           | 11.0                      | 400        | 20.0            |                     | 5, 10 | 536.5           | 17.0                      | 700        | 97.2            |
|                     | 15    | 233.5           | 11.0                      | 400        | 24.0            |                     | 15    | 554.5           | 17.0                      | 700        | 118             |
|                     | 20    | 242.5           | 12.8                      | 400        | 30.0            |                     | 20    | 572.5           | 19.8                      | 700        | 149             |
| 250                 | 25    | 253.5           | 12.8                      | 400        | 35.8            | 600                 | 25    | 591.5           | 21.8                      | 700        | 180             |
|                     | 5     | 271.0           | 12.0                      | 450        | 24.7            |                     | 5, 10 | 643.5           | 19.0                      | 800        | 145             |
|                     | 10    | 276.5           | 12.0                      | 450        | 28.0            |                     | 15    | 665.5           | 19.0                      | 800        | 175             |
|                     | 15    | 284.5           | 12.0                      | 450        | 32.7            |                     | 20    | 686.5           | 22.2                      | 800        | 220             |
|                     | 20    | 294.5           | 14.0                      | 450        | 41.1            | 25                  | 710.5 | 24.4            | 800                       | 267        |                 |
|                     | 25    | 305.5           | 14.0                      | 450        | 48.1            |                     |       |                 |                           |            |                 |

TABLE 4 DIMENSIONS AND MASS OF CAST IRON PLAIN-END BENDS ( $11\frac{1}{2}^\circ$ )

( Clause 6.1 )

All dimensions in millimetres.



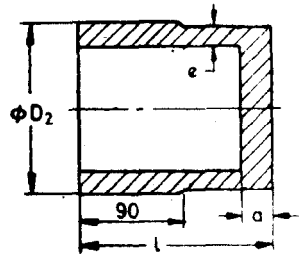
$D_2$  = machined outside diameter of asbestos-cement pressure pipe.

| NOMINAL DIAMETER DN | CLASS | FINISH OD $D_2$ | BARREL WALL THICKNESS $e$ | RADIUS $r$ | NOMINAL MASS kg | NOMINAL DIAMETER DN | CLASS | FINISH OD $D_2$ | BARREL WALL THICKNESS | RADIUS $r$ | NOMINAL MASS kg |
|---------------------|-------|-----------------|---------------------------|------------|-----------------|---------------------|-------|-----------------|-----------------------|------------|-----------------|
| (1)                 | (2)   | (3)             | (4)                       | (5)        | (6)             | (1)                 | (2)   | (3)             | (4)                   | (5)        | (6)             |
| 80                  | 5, 10 | 99.5            | 8.6                       | 280        | 4.70            | 300                 | 5     | 322.5           | 13.0                  | 500        | 24.3            |
|                     | 15    | 99.5            | 8.6                       | 280        | 4.70            |                     | 10    | 328.5           | 13.0                  | 500        | 28.4            |
|                     | 20    | 101.5           | 10.0                      | 280        | 5.30            |                     | 15    | 340.5           | 13.0                  | 500        | 37.0            |
|                     | 25    | 106.5           | 10.0                      | 280        | 6.40            |                     | 20    | 352.5           | 15.2                  | 500        | 47.5            |
| 100                 | 5, 10 | 120.0           | 9.0                       | 300        | 6.00            | 350                 | 25    | 366.5           | 15.2                  | 500        | 58.1            |
|                     | 15    | 121.0           | 9.0                       | 300        | 6.30            |                     | 5, 10 | 379.5           | 14.0                  | 550        | 35.8            |
|                     | 20    | 126.5           | 10.5                      | 300        | 8.00            |                     | 15    | 392.0           | 14.0                  | 550        | 46.1            |
|                     | 25    | 132.5           | 10.5                      | 300        | 9.60            |                     | 20    | 405.0           | 16.3                  | 550        | 59.3            |
| 125                 | 5, 10 | 145.0           | 9.5                       | 325        | 7.70            | 400                 | 25    | 419.0           | 17.9                  | 550        | 73.1            |
|                     | 15    | 147.0           | 9.5                       | 325        | 8.30            |                     | 5, 10 | 432.0           | 15.0                  | 600        | 45.6            |
|                     | 20    | 152.5           | 11.1                      | 325        | 10.4            |                     | 15    | 448.0           | 15.0                  | 600        | 60.5            |
|                     | 25    | 159.5           | 11.1                      | 325        | 12.7            |                     | 20    | 463.0           | 17.5                  | 600        | 78.0            |
| 150                 | 5, 10 | 171.0           | 10.0                      | 350        | 9.8             | 450                 | 25    | 478.0           | 19.3                  | 600        | 95.2            |
|                     | 15    | 176.5           | 10.0                      | 350        | 11.8            |                     | 5, 10 | 482.0           | 16.0                  | 650        | 54.1            |
|                     | 20    | 183.0           | 11.7                      | 350        | 14.7            |                     | 15    | 4.8.0           | 16.0                  | 650        | 70.7            |
|                     | 25    | 191.0           | 11.7                      | 350        | 17.9            |                     | 20    | 515.0           | 18.7                  | 650        | 93.1            |
| 200                 | 5     | 221.0           | 11.0                      | 400        | 13.7            | 500                 | 25    | 532.0           | 20.6                  | 650        | 115             |
|                     | 10    | 225.0           | 11.0                      | 400        | 15.6            |                     | 5, 10 | 536.5           | 17.0                  | 700        | 68.6            |
|                     | 15    | 233.5           | 11.0                      | 400        | 19.7            |                     | 15    | 554.5           | 17.0                  | 700        | 89.5            |
|                     | 20    | 242.5           | 12.8                      | 400        | 25.0            |                     | 20    | 572.5           | 19.8                  | 700        | 115             |
|                     | 25    | 253.5           | 12.8                      | 400        | 30.8            |                     | 25    | 591.5           | 21.8                  | 700        | 143             |
| 50                  | 5     | 271.0           | 12.0                      | 450        | 18.2            | 600                 | 5, 10 | 643.5           | 19.0                  | 800        | 101             |
|                     | 10    | 276.5           | 12.0                      | 450        | 21.4            |                     | 15    | 665.5           | 19.0                  | 800        | 132             |
|                     | 15    | 284.5           | 12.0                      | 450        | 26.1            |                     | 20    | 686.5           | 22.2                  | 800        | 169             |
|                     | 20    | 294.5           | 14.0                      | 450        | 33.4            |                     | 25    | 710.5           | 24.4                  | 800        | 210             |
|                     | 25    | 305.5           | 14.0                      | 450        | 40.4            |                     |       |                 |                       |            |                 |

TABLE 5 DIMENSIONS AND MASS OF CAST IRON PLAIN-END PLUGS

( Clause 6.1 )

All dimensions in millimetres.

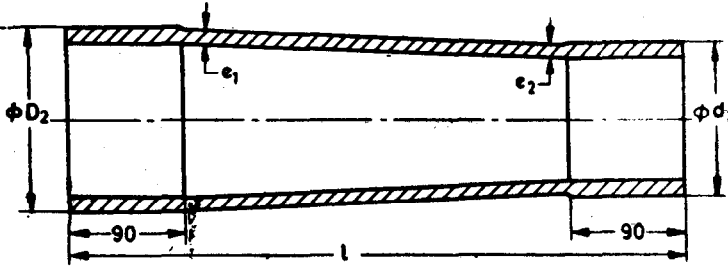
 $D_2$  = machined outside diameter of asbestos-cement pressure pipe.

| NOMI-<br>NAL<br>DIA-<br>METER<br>DN | CLASS | FINISH<br>OD<br>$D_2$ | WALL<br>THICK-<br>NESS<br>$e$ | END<br>THICK-<br>NESS<br>$a$ | LENGTH<br>$l$ | NOMI-<br>NAL<br>MASS<br>kg | NOMI-<br>NAL<br>DIA-<br>METER<br>DN | CLASS | FINISH<br>OD<br>$D_2$ | WALL<br>THICK-<br>NESS<br>$e$ | END<br>THICK-<br>NESS<br>$a$ | LENGTH<br>$l$ | NOMI-<br>NAL<br>MASS<br>kg |
|-------------------------------------|-------|-----------------------|-------------------------------|------------------------------|---------------|----------------------------|-------------------------------------|-------|-----------------------|-------------------------------|------------------------------|---------------|----------------------------|
| (1)                                 | (2)   | (3)                   | (4)                           | (5)                          | (6)           | (7)                        | (1)                                 | (2)   | (3)                   | (4)                           | (5)                          | (6)           | (7)                        |
| 80                                  | 5, 10 | 99.5                  | 8.6                           | 21                           | 125           | 3.40                       | 300                                 | 5     | 322.5                 | 13.0                          | 27.5                         | 160           | 27.8                       |
|                                     | 15    | 99.5                  | 8.6                           | 21                           | 125           | 3.40                       |                                     | 10    | 328.5                 | 13.0                          | 27.5                         | 160           | 31.5                       |
|                                     | 20    | 101.5                 | 10.0                          | 21                           | 125           | 3.70                       |                                     | 15    | 340.5                 | 13.0                          | 27.5                         | 160           | 39.1                       |
|                                     | 25    | 106.5                 | 10.0                          | 21                           | 125           | 4.40                       |                                     | 20    | 352.5                 | 15.2                          | 27.5                         | 160           | 46.9                       |
| 100                                 | 5, 10 | 120.0                 | 9.0                           | 22                           | 130           | 4.70                       | 350                                 | 25    | 366.5                 | 15.2                          | 27.5                         | 160           | 56.4                       |
|                                     | 15    | 121.0                 | 9.0                           | 22                           | 130           | 4.90                       |                                     | 5, 10 | 379.5                 | 14.0                          | 29.0                         | 165           | 41.9                       |
|                                     | 20    | 126.5                 | 10.5                          | 22                           | 130           | 5.50                       |                                     | 15    | 392.0                 | 14.0                          | 29.0                         | 165           | 51.3                       |
|                                     | 25    | 132.5                 | 10.5                          | 22                           | 130           | 7.10                       |                                     | 20    | 405.0                 | 16.3                          | 29.0                         | 165           | 61.4                       |
| 125                                 | 5, 10 | 145.0                 | 9.5                           | 22.5                         | 135           | 6.40                       | 400                                 | 25    | 419.0                 | 17.9                          | 29.0                         | 165           | 72.6                       |
|                                     | 15    | 147.0                 | 9.5                           | 22.5                         | 135           | 6.80                       |                                     | 5, 10 | 432.0                 | 15.0                          | 30.00                        | 170           | 55.0                       |
|                                     | 20    | 152.5                 | 11.1                          | 22.5                         | 135           | 8.10                       |                                     | 15    | 448.0                 | 15.0                          | 30.00                        | 170           | 69.1                       |
|                                     | 25    | 159.5                 | 11.1                          | 22.5                         | 135           | 9.90                       |                                     | 20    | 463.0                 | 17.5                          | 30.00                        | 170           | 82.8                       |
| 150                                 | 5, 10 | 171.0                 | 10.0                          | 23.0                         | 140           | 8.60                       | 450                                 | 25    | 478.0                 | 19.3                          | 30.00                        | 170           | 96.9                       |
|                                     | 15    | 176.5                 | 10.0                          | 23.0                         | 140           | 10.2                       |                                     | 5, 10 | 482.0                 | 16.0                          | 31.5                         | 175           | 68.4                       |
|                                     | 20    | 183.0                 | 11.7                          | 23.0                         | 140           | 12.1                       |                                     | 15    | 498.0                 | 16.0                          | 31.5                         | 175           | 84.6                       |
|                                     | 25    | 191.0                 | 11.7                          | 23.0                         | 140           | 14.6                       |                                     | 20    | 515.0                 | 18.7                          | 31.5                         | 175           | 102                        |
| 200                                 | 5     | 221.0                 | 11.0                          | 24.5                         | 150           | 13.6                       | 500                                 | 25    | 532.0                 | 20.6                          | 31.5                         | 175           | 121                        |
|                                     | 10    | 225.0                 | 11.0                          | 24.5                         | 150           | 15.2                       |                                     | 5, 10 | 536.5                 | 17.0                          | 33.0                         | 180           | 89                         |
|                                     | 15    | 233.5                 | 11.0                          | 24.5                         | 150           | 18.6                       |                                     | 15    | 554.5                 | 17.0                          | 33.0                         | 180           | 110                        |
|                                     | 20    | 242.5                 | 12.8                          | 24.5                         | 150           | 22.4                       |                                     | 20    | 572.5                 | 19.8                          | 33.0                         | 180           | 131                        |
| 250                                 | 25    | 253.5                 | 12.8                          | 24.5                         | 150           | 27.2                       | 600                                 | 25    | 591.5                 | 21.8                          | 33.0                         | 180           | 155                        |
|                                     | 5     | 271.0                 | 12.0                          | 26.0                         | 155           | 19.6                       |                                     | 5, 10 | 643.5                 | 19.0                          | 36.0                         | 185           | 135                        |
|                                     | 10    | 276.5                 | 12.0                          | 26.0                         | 155           | 22.3                       |                                     | 15    | 655.5                 | 19.0                          | 36.0                         | 185           | 167                        |
|                                     | 15    | 284.5                 | 12.0                          | 26.0                         | 155           | 26.4                       |                                     | 20    | 686.5                 | 22.2                          | 36.0                         | 185           | 198                        |
|                                     | 20    | 294.5                 | 14.0                          | 26.0                         | 155           | 31.7                       |                                     | 25    | 710.5                 | 24.4                          | 36.0                         | 185           | 234                        |
| 25                                  | 305.5 | 14.0                  | 26.0                          | 155                          | 37.8          |                            |                                     |       |                       |                               |                              |               |                            |

**TABLE 6 DIMENSIONS AND MASS OF CAST IRON PLAIN-END REDUCERS**

( Clause 6.1 )

All dimensions in millimetres.



$D_2$  = machined outside diameter of asbestos-cement pressure pipe at the large end.

$d_2$  = machined outside diameter of asbestos-cement pressure pipe at the small end.

| NOMINAL DIAMETER |           | CLASS | FINISH OD |           | BARREL WALL THICKNESSES |           | TOTAL LENGTH $l$ | NOMINAL MASS kg |
|------------------|-----------|-------|-----------|-----------|-------------------------|-----------|------------------|-----------------|
| DN (1)           | $d_n$ (2) |       | $D_2$ (4) | $d_2$ (5) | $e_1$ (6)               | $e_2$ (7) |                  |                 |
| 100              | 80        | 5, 10 | 120.0     | 99.5      | 9.0                     | 8.6       | 400              | 8.30            |
|                  |           | 15    | 121.0     | 99.5      | 9.0                     | 8.6       | 400              | 8.40            |
|                  |           | 20    | 126.5     | 101.5     | 10.5                    | 10.0      | 400              | 10.0            |
|                  |           | 25    | 132.5     | 106.5     | 10.0                    | 10.0      | 400              | 11.4            |
| 125              | 80        | 5, 10 | 145.0     | 99.5      | 9.5                     | 8.6       | 400              | 9.60            |
|                  |           | 15    | 147.0     | 99.5      | 9.5                     | 8.6       | 400              | 9.50            |
|                  |           | 20    | 152.5     | 101.5     | 11.1                    | 10.0      | 400              | 11.8            |
|                  |           | 25    | 159.5     | 106.5     | 11.1                    | 10.0      | 400              | 13.5            |
| 125              | 100       | 5, 10 | 145.0     | 120.0     | 9.5                     | 9.0       | 400              | 10.6            |
|                  |           | 15    | 147.0     | 121.0     | 9.5                     | 9.0       | 400              | 11.0            |
|                  |           | 20    | 152.5     | 126.5     | 11.1                    | 10.5      | 400              | 13.5            |
|                  |           | 25    | 159.5     | 132.5     | 11.1                    | 10.5      | 400              | 15.5            |
| 150              | 80        | 5, 10 | 171.0     | 99.5      | 10.0                    | 8.6       | 400              | 11.1            |
|                  |           | 15    | 176.5     | 99.5      | 10.0                    | 8.6       | 400              | 12.1            |
|                  |           | 20    | 183.0     | 101.5     | 11.7                    | 10.0      | 400              | 14.5            |
|                  |           | 25    | 191.0     | 106.5     | 11.7                    | 10.0      | 400              | 16.6            |
| 150              | 100       | 5, 10 | 171.0     | 120.0     | 10.0                    | 9.0       | 400              | 12.1            |
|                  |           | 15    | 176.5     | 121.0     | 10.0                    | 9.0       | 400              | 13.2            |
|                  |           | 20    | 183.0     | 126.5     | 11.7                    | 10.5      | 400              | 16.3            |
|                  |           | 25    | 191.0     | 132.5     | 11.7                    | 10.5      | 400              | 18.7            |
| 150              | 125       | 5, 10 | 171.0     | 145.0     | 10.0                    | 9.5       | 400              | 13.4            |
|                  |           | 15    | 176.5     | 147.0     | 10.0                    | 9.5       | 400              | 14.7            |
|                  |           | 20    | 183.0     | 152.5     | 11.7                    | 11.1      | 400              | 18.0            |
|                  |           | 25    | 191.0     | 159.5     | 11.7                    | 11.1      | 400              | 20.8            |
| 200              | 100       | 5     | 221.0     | 120.0     | 11.0                    | 9.0       | 400              | 15.0            |
|                  |           | 10    | 225.0     | 120.0     | 11.0                    | 9.0       | 400              | 16.0            |
|                  |           | 15    | 233.5     | 121.0     | 11.0                    | 9.0       | 400              | 18.2            |
|                  |           | 20    | 242.5     | 126.5     | 12.8                    | 10.5      | 400              | 22.5            |
|                  |           | 25    | 253.5     | 132.5     | 12.8                    | 10.5      | 400              | 26.2            |
| 200              | 125       | 5     | 221.0     | 145.0     | 11.0                    | 9.5       | 400              | 16.3            |
|                  |           | 10    | 225.0     | 145.0     | 11.0                    | 9.5       | 400              | 17.3            |
|                  |           | 15    | 233.5     | 147.0     | 11.0                    | 9.5       | 400              | 19.6            |
|                  |           | 20    | 242.5     | 152.5     | 12.8                    | 11.1      | 400              | 24.2            |
|                  |           | 25    | 253.5     | 159.5     | 12.8                    | 11.1      | 400              | 28.3            |
| 200              | 150       | 5     | 221.0     | 171.0     | 11.0                    | 10.0      | 400              | 17.9            |
|                  |           | 10    | 225.0     | 171.0     | 11.0                    | 10.0      | 400              | 18.8            |
|                  |           | 15    | 233.5     | 176.5     | 11.0                    | 10.0      | 400              | 21.9            |
|                  |           | 20    | 242.5     | 183.0     | 12.8                    | 11.7      | 400              | 27.0            |
|                  |           | 25    | 252.5     | 191.0     | 12.8                    | 11.7      | 400              | 31.5            |
| 250              | 125       | 5     | 271.0     | 145.0     | 12.0                    | 9.5       | 400              | 19.6            |
|                  |           | 10    | 276.5     | 145.0     | 12.0                    | 9.5       | 400              | 21.2            |
|                  |           | 15    | 284.5     | 147.0     | 12.0                    | 9.5       | 400              | 23.8            |
|                  |           | 20    | 294.5     | 152.5     | 14.0                    | 11.1      | 400              | 29.6            |
|                  |           | 25    | 305.5     | 159.5     | 14.0                    | 11.1      | 400              | 34.3            |

( Continued )

TABLE 6 DIMENSIONS AND MASS OF CAST IRON PLAIN-END REDUCERS — Contd

| NOMINAL DIAMETER |                      | CLASS | FINISH OD            |                      | BARREL WALL THICKNESSES |                      | TOTAL LENGTH <i>l</i> | NOMINAL MASS kg |
|------------------|----------------------|-------|----------------------|----------------------|-------------------------|----------------------|-----------------------|-----------------|
| DN               | <i>d<sub>n</sub></i> |       | <i>D<sub>2</sub></i> | <i>d<sub>2</sub></i> | <i>e<sub>1</sub></i>    | <i>e<sub>2</sub></i> |                       |                 |
| (1)              | (2)                  | (3)   | (4)                  | (5)                  | (6)                     | (7)                  | (8)                   | (9)             |
| 250              | 150                  | 5     | 271.0                | 171.0                | 12.0                    | 10.0                 | 400                   | 21.1            |
|                  |                      | 10    | 276.5                | 171.0                | 12.0                    | 10.0                 | 400                   | 22.7            |
|                  |                      | 15    | 284.5                | 176.5                | 12.0                    | 10.0                 | 400                   | 26.1            |
|                  |                      | 20    | 294.5                | 183.0                | 14.0                    | 11.7                 | 400                   | 32.4            |
|                  |                      | 25    | 305.5                | 191.0                | 14.0                    | 11.7                 | 400                   | 37.5            |
| 250              | 200                  | 5     | 271.5                | 221.0                | 12.0                    | 11.0                 | 400                   | 24.0            |
|                  |                      | 10    | 276.5                | 225.0                | 12.0                    | 11.0                 | 400                   | 26.5            |
|                  |                      | 15    | 284.5                | 233.5                | 12.0                    | 11.0                 | 400                   | 31.0            |
|                  |                      | 20    | 294.5                | 242.5                | 14.0                    | 12.8                 | 400                   | 38.6            |
|                  |                      | 25    | 305.5                | 253.5                | 14.0                    | 12.8                 | 400                   | 45.0            |
| 300              | 450                  | 5     | 322.5                | 171.0                | 13.0                    | 10.0                 | 400                   | 25.2            |
|                  |                      | 10    | 328.5                | 171.0                | 13.0                    | 10.0                 | 400                   | 27.2            |
|                  |                      | 15    | 340.5                | 176.5                | 13.0                    | 10.0                 | 400                   | 32.5            |
|                  |                      | 20    | 352.5                | 183.0                | 15.2                    | 11.7                 | 400                   | 40.6            |
|                  |                      | 25    | 366.5                | 191.0                | 15.2                    | 11.7                 | 400                   | 47.5            |
| 300              | 200                  | 5     | 322.5                | 221.0                | 13.0                    | 11.0                 | 400                   | 28.1            |
|                  |                      | 10    | 328.5                | 225.0                | 13.0                    | 11.0                 | 400                   | 31.1            |
|                  |                      | 15    | 340.5                | 233.5                | 13.0                    | 11.0                 | 400                   | 37.5            |
|                  |                      | 20    | 352.5                | 242.5                | 15.2                    | 12.8                 | 400                   | 46.8            |
|                  |                      | 25    | 366.5                | 253.5                | 15.2                    | 12.8                 | 400                   | 55.1            |
| 300              | 250                  | 5     | 322.5                | 271.0                | 13.0                    | 12.0                 | 400                   | 31.2            |
|                  |                      | 10    | 328.5                | 276.5                | 13.0                    | 12.0                 | 400                   | 34.8            |
|                  |                      | 15    | 340.5                | 284.5                | 13.0                    | 12.0                 | 400                   | 41.5            |
|                  |                      | 20    | 352.5                | 294.5                | 15.2                    | 14.0                 | 400                   | 50.0            |
|                  |                      | 25    | 366.5                | 305.5                | 15.2                    | 14.0                 | 400                   | 60.8            |
| 350              | 200                  | 5     | 379.5                | 221.0                | 14.0                    | 11.0                 | 600                   | 50.7            |
|                  |                      | 10    | 379.5                | 225.0                | 14.0                    | 11.0                 | 600                   | 51.7            |
|                  |                      | 15    | 392.0                | 233.5                | 14.0                    | 11.0                 | 600                   | 58.9            |
|                  |                      | 20    | 405.0                | 242.5                | 16.3                    | 12.8                 | 600                   | 72.3            |
|                  |                      | 25    | 419.0                | 253.5                | 17.9                    | 12.8                 | 600                   | 83.5            |
| 350              | 250                  | 5     | 379.5                | 271.0                | 14.0                    | 12.0                 | 600                   | 56.1            |
|                  |                      | 10    | 379.5                | 276.5                | 14.0                    | 12.0                 | 600                   | 57.7            |
|                  |                      | 15    | 392.0                | 284.5                | 14.0                    | 12.0                 | 600                   | 65.2            |
|                  |                      | 20    | 405.0                | 294.5                | 16.3                    | 14.0                 | 600                   | 80.2            |
|                  |                      | 25    | 419.0                | 305.5                | 17.9                    | 14.0                 | 600                   | 92.3            |
| 350              | 300                  | 5     | 379.5                | 322.5                | 14.0                    | 13.0                 | 600                   | 62.4            |
|                  |                      | 10    | 379.5                | 328.5                | 14.0                    | 13.0                 | 600                   | 64.5            |
|                  |                      | 15    | 392.0                | 340.5                | 14.0                    | 13.0                 | 600                   | 73.9            |
|                  |                      | 20    | 405.0                | 352.5                | 16.3                    | 15.2                 | 600                   | 91.0            |
|                  |                      | 25    | 419.0                | 366.5                | 17.9                    | 15.2                 | 600                   | 105.0           |
| 400              | 250                  | 5     | 432.0                | 271.0                | 15.0                    | 12.0                 | 600                   | 64.1            |
|                  |                      | 10    | 432.0                | 276.5                | 15.0                    | 12.0                 | 600                   | 65.7            |
|                  |                      | 15    | 448.0                | 284.5                | 15.0                    | 12.0                 | 600                   | 75.6            |
|                  |                      | 20    | 463.0                | 294.5                | 17.5                    | 14.0                 | 600                   | 93.3            |
|                  |                      | 25    | 478.0                | 305.5                | 19.3                    | 14.0                 | 600                   | 107.0           |
| 400              | 300                  | 5     | 432.0                | 322.5                | 15.0                    | 13.0                 | 600                   | 70.4            |
|                  |                      | 10    | 432.0                | 328.5                | 15.0                    | 13.0                 | 600                   | 72.5            |
|                  |                      | 15    | 448.0                | 340.5                | 15.0                    | 13.0                 | 600                   | 84.3            |
|                  |                      | 20    | 463.0                | 352.5                | 17.5                    | 15.2                 | 600                   | 104.0           |
|                  |                      | 25    | 478.0                | 366.5                | 19.3                    | 15.2                 | 600                   | 120.0           |
| 400              | 350                  | 5, 10 | 432.0                | 379.5                | 15.0                    | 14.0                 | 600                   | 79.5            |
|                  |                      | 15    | 448.0                | 392.0                | 15.0                    | 14.0                 | 600                   | 92.1            |
|                  |                      | 20    | 463.0                | 405.0                | 17.5                    | 16.3                 | 600                   | 114.0           |
|                  |                      | 25    | 478.0                | 419.0                | 19.3                    | 17.9                 | 600                   | 134.0           |
|                  |                      | 5, 10 | 482.0                | 379.5                | 16.0                    | 14.0                 | 600                   | 87.1            |
| 450              | 350                  | 15    | 498.0                | 392.0                | 16.0                    | 14.0                 | 600                   | 100             |
|                  |                      | 20    | 515.0                | 405.0                | 18.7                    | 16.3                 | 600                   | 125             |
|                  |                      | 25    | 532.0                | 419.0                | 20.6                    | 17.9                 | 600                   | 148             |
|                  |                      | 5, 10 | 482.0                | 432.0                | 16.0                    | 15.0                 | 600                   | 95.4            |
|                  |                      | 15    | 498.0                | 448.0                | 16.0                    | 15.0                 | 600                   | 111             |
| 450              | 400                  | 20    | 515.0                | 463.0                | 18.7                    | 17.5                 | 600                   | 138             |
|                  |                      | 25    | 532.0                | 478.0                | 20.6                    | 19.3                 | 600                   | 163             |

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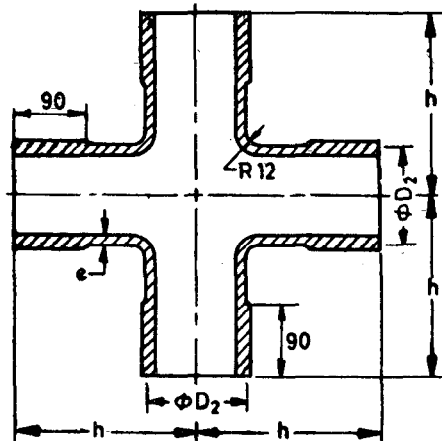
**TABLE 6 DIMENSIONS AND MASS OF CAST IRON PLAIN-END REDUCERS — Contd**

| NOMINAL DIAMETER |                              | CLASS | FINISH OD                    |                              | BARREL WALL THICKNESSES      |                              | TOTAL LENGTH<br><i>l</i> | NOMINAL MASS<br>kg |
|------------------|------------------------------|-------|------------------------------|------------------------------|------------------------------|------------------------------|--------------------------|--------------------|
| DN<br>(1)        | <i>d</i> <sub>2</sub><br>(2) |       | <i>D</i> <sub>2</sub><br>(4) | <i>d</i> <sub>2</sub><br>(5) | <i>e</i> <sub>1</sub><br>(6) | <i>e</i> <sub>2</sub><br>(7) |                          |                    |
| 500              | 350                          | 5, 10 | 536.5                        | 379.5                        | 17.0                         | 14.0                         | 600                      | 97.8               |
|                  |                              | 15    | 554.5                        | 392.0                        | 17.0                         | 14.0                         | 600                      | 113                |
|                  |                              | 20    | 572.5                        | 405.0                        | 19.8                         | 16.3                         | 600                      | 141                |
|                  |                              | 25    | 591.5                        | 419.0                        | 21.8                         | 17.9                         | 600                      | 166                |
| 500              | 400                          | 5, 10 | 536.5                        | 432.0                        | 17.0                         | 15.0                         | 600                      | 106                |
|                  |                              | 15    | 554.5                        | 448.0                        | 17.0                         | 15.0                         | 600                      | 124                |
|                  |                              | 20    | 572.5                        | 463.0                        | 19.8                         | 17.5                         | 600                      | 154                |
|                  |                              | 25    | 591.5                        | 478.0                        | 21.8                         | 19.3                         | 609                      | 182                |
| 500              | 450                          | 5, 10 | 536.5                        | 482.0                        | 17.0                         | 16.0                         | 600                      | 114                |
|                  |                              | 15    | 554.5                        | 498.0                        | 17.0                         | 16.0                         | 600                      | 132                |
|                  |                              | 20    | 572.5                        | 515.0                        | 19.8                         | 18.7                         | 600                      | 165                |
|                  |                              | 25    | 591.5                        | 532.0                        | 21.8                         | 20.6                         | 600                      | 196                |
| 600              | 400                          | 5, 10 | 643.5                        | 432.0                        | 19.0                         | 15.0                         | 600                      | 129                |
|                  |                              | 15    | 665.5                        | 448.0                        | 19.0                         | 15.0                         | 600                      | 152                |
|                  |                              | 20    | 686.5                        | 463.0                        | 22.2                         | 17.5                         | 600                      | 189                |
|                  |                              | 25    | 710.5                        | 478.0                        | 24.4                         | 19.3                         | 600                      | 224                |
| 600              | 450                          | 5, 10 | 643.5                        | 482.0                        | 19.0                         | 16.0                         | 600                      | 137                |
|                  |                              | 15    | 665.5                        | 498.0                        | 19.0                         | 16.0                         | 600                      | 161                |
|                  |                              | 20    | 686.5                        | 515.0                        | 22.2                         | 18.7                         | 600                      | 200                |
|                  |                              | 25    | 710.5                        | 532.0                        | 24.4                         | 20.6                         | 600                      | 238                |
| 600              | 500                          | 5, 10 | 643.5                        | 536.5                        | 19.0                         | 17.0                         | 600                      | 148                |
|                  |                              | 15    | 665.5                        | 554.5                        | 19.0                         | 17.0                         | 600                      | 173                |
|                  |                              | 20    | 686.5                        | 572.5                        | 22.2                         | 19.8                         | 600                      | 216                |
|                  |                              | 25    | 710.5                        | 591.5                        | 24.4                         | 21.8                         | 600                      | 257                |

**TABLE 7 DIMENSIONS AND MASS OF CAST IRON CROSSES**

(Clause 6.1)

All dimensions in millimetres.



*D*<sub>2</sub> = machined outside diameter of asbestos-cement pressure pipe.

| NOMINAL DIAMETER<br>DN<br>(1) | CLASS<br>(2) | FINISH OD<br><i>D</i> <sub>2</sub><br>(3) | BARREL THICKNESSES<br><i>e</i><br>(4) | HALF LENGTH<br><i>h</i><br>(5) | NOMINAL MASS<br>kg<br>(6) |
|-------------------------------|--------------|---|---------------------------------------|--------------------------------|---------------------------|
| 80                            | 5, 10        | 99.5                                      | 8.6                                   | 180                            | 12.2                      |
|                               | 15           | 99.5                                      | 8.6                                   | 180                            | 12.2                      |
|                               | 20           | 101.5                                     | 10.0                                  | 180                            | 13.8                      |
|                               | 25           | 106.5                                     | 10.0                                  | 180                            | 16.0                      |

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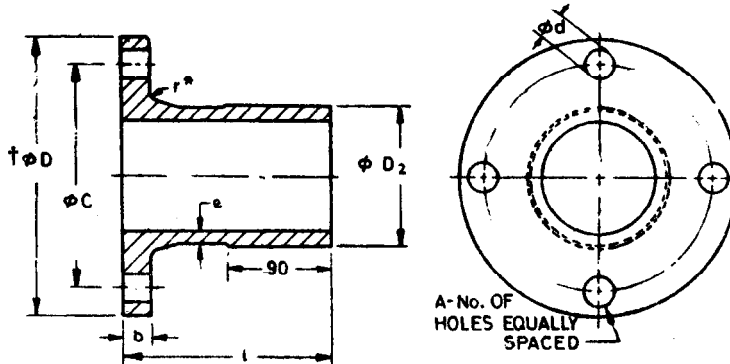
TABLE 7 DIMENSIONS AND MASS OF CAST IRON CROSSES -- Contd

| NOMINAL<br>DIAMETER<br>DN | CLASS | FINISH<br>OD<br>$D_1$ | BARREL<br>THICKNESSES<br>$e$ | HALF<br>LENGTH<br>$h$ | NOMINAL<br>MASS<br>kg |
|---------------------------|-------|-----------------------|------------------------------|-----------------------|-----------------------|
| (1)                       | (2)   | (3)                   | (4)                          | (5)                   | (6)                   |
| 100                       | 5, 10 | 120.0                 | 9.0                          | 200                   | 16.8                  |
|                           | 15    | 121.0                 | 9.0                          | 200                   | 17.3                  |
|                           | 20    | 126.5                 | 10.5                         | 200                   | 21.5                  |
|                           | 25    | 132.5                 | 10.5                         | 200                   | 24.8                  |
| 125                       | 5, 10 | 145.0                 | 9.5                          | 225                   | 23.4                  |
|                           | 15    | 147.0                 | 9.5                          | 225                   | 24.6                  |
|                           | 20    | 152.5                 | 11.1                         | 225                   | 30.2                  |
|                           | 25    | 159.5                 | 11.1                         | 225                   | 34.8                  |
| 150                       | 5, 10 | 171.0                 | 10.0                         | 250                   | 32.0                  |
|                           | 15    | 176.5                 | 10.0                         | 250                   | 36.1                  |
|                           | 20    | 183.0                 | 11.7                         | 250                   | 44.2                  |
|                           | 25    | 191.0                 | 11.7                         | 250                   | 50.5                  |
| 200                       | 5     | 221.0                 | 11.0                         | 300                   | 52.6                  |
|                           | 10    | 225.0                 | 11.0                         | 300                   | 56.4                  |
|                           | 15    | 233.5                 | 11.0                         | 300                   | 64.7                  |
|                           | 20    | 242.5                 | 12.8                         | 300                   | 79.4                  |
|                           | 25    | 253.5                 | 12.8                         | 300                   | 91.0                  |
| 250                       | 5     | 271.0                 | 12.0                         | 350                   | 80.0                  |
|                           | 10    | 276.5                 | 12.0                         | 350                   | 86.4                  |
|                           | 15    | 284.5                 | 12.0                         | 350                   | 95.9                  |
|                           | 20    | 294.5                 | 14.0                         | 350                   | 118                   |
|                           | 25    | 305.5                 | 14.0                         | 350                   | 132                   |
| 300                       | 5     | 322.5                 | 13.0                         | 400                   | 118                   |
|                           | 10    | 328.5                 | 13.0                         | 400                   | 126                   |
|                           | 15    | 340.5                 | 13.0                         | 400                   | 143                   |
|                           | 20    | 352.5                 | 15.2                         | 400                   | 176                   |
|                           | 25    | 366.5                 | 15.2                         | 400                   | 197                   |
| 350                       | 5, 10 | 379.5                 | 14.0                         | 450                   | 173                   |
|                           | 15    | 392.0                 | 14.0                         | 450                   | 194                   |
|                           | 20    | 405.0                 | 16.3                         | 450                   | 237                   |
|                           | 25    | 419.0                 | 17.9                         | 450                   | 276                   |
| 400                       | 5, 10 | 432.0                 | 15.0                         | 500                   | 234                   |
|                           | 15    | 448.0                 | 15.0                         | 500                   | 264                   |
|                           | 20    | 463.0                 | 17.5                         | 500                   | 323                   |
|                           | 25    | 478.0                 | 19.3                         | 500                   | 375                   |
| 450                       | 5, 10 | 482.0                 | 16.0                         | 550                   | 302                   |
|                           | 15    | 498.0                 | 16.0                         | 550                   | 336                   |
|                           | 20    | 515.0                 | 18.7                         | 550                   | 413                   |
|                           | 25    | 532.0                 | 20.6                         | 550                   | 480                   |
| 500                       | 5, 10 | 536.5                 | 17.0                         | 600                   | 393                   |
|                           | 15    | 554.5                 | 17.0                         | 600                   | 434                   |
|                           | 20    | 572.5                 | 19.8                         | 600                   | 530                   |
|                           | 25    | 591.5                 | 21.8                         | 600                   | 614                   |
| 600                       | 5, 10 | 643.5                 | 19.0                         | 700                   | 615                   |
|                           | 15    | 665.5                 | 19.0                         | 700                   | 676                   |
|                           | 20    | 686.5                 | 22.2                         | 700                   | 822                   |
|                           | 25    | 710.5                 | 24.4                         | 700                   | 951                   |

TABLE 8 DIMENSIONS AND MASS OF CAST IRON PLAIN-END FLANGED SPIGOTS

(Clause 6.1)

All dimensions in millimetres.

 $D_s$  = machined outside diameter of asbestos-cement pressure pipe.

| NOMINAL<br>DIAMETER<br>DN<br>(1) | CLASS<br>(2) | NOMINAL DIMENSIONS |            |            |            |            | HOLES      |            | DIA<br>OF<br>BOLTS<br>(10) | LENGTH<br>$l$<br>(11) | NOMINAL<br>MASS<br>kg<br>(12) |
|----------------------------------|--------------|--------------------|------------|------------|------------|------------|------------|------------|----------------------------|-----------------------|-------------------------------|
|                                  |              | $D_s$<br>(3)       | $D$<br>(4) | $C$<br>(5) | $b$<br>(6) | $e$<br>(7) | No.<br>(8) | Dia<br>(9) |                            |                       |                               |
| 80                               | 5, 10        | 99.5               | 200        | 160        | 21.0       | 8.6        | 4          | 19         | 16                         | 200                   | 7.40                          |
|                                  | 15           | 99.5               | 200        | 160        | 21.0       | 8.6        | 4          | 19         | 16                         | 200                   | 7.40                          |
|                                  | 20           | 101.5              | 200        | 160        | 21.0       | 10.0       | 4          | 19         | 16                         | 200                   | 7.90                          |
|                                  | 25           | 106.5              | 200        | 160        | 21.0       | 10.0       | 4          | 19         | 16                         | 200                   | 8.50                          |
| 100                              | 5, 10        | 120.0              | 220        | 180        | 22.0       | 9.0        | 8          | 19         | 16                         | 200                   | 9.00                          |
|                                  | 15           | 121.0              | 220        | 180        | 22.0       | 9.0        | 8          | 19         | 16                         | 200                   | 9.10                          |
|                                  | 20           | 126.5              | 220        | 180        | 22.0       | 10.5       | 8          | 19         | 16                         | 200                   | 10.2                          |
|                                  | 25           | 132.5              | 220        | 180        | 22.0       | 10.5       | 8          | 19         | 16                         | 200                   | 11.0                          |
| 125                              | 5, 10        | 145.0              | 250        | 210        | 22.5       | 9.5        | 8          | 19         | 16                         | 200                   | 11.3                          |
|                                  | 15           | 147.0              | 250        | 210        | 22.5       | 9.5        | 8          | 19         | 16                         | 200                   | 11.7                          |
|                                  | 20           | 152.5              | 250        | 210        | 22.5       | 11.1       | 8          | 19         | 16                         | 200                   | 13.0                          |
|                                  | 25           | 159.5              | 250        | 210        | 22.5       | 11.1       | 8          | 19         | 16                         | 200                   | 14.7                          |
| 150                              | 5, 10        | 171.0              | 285        | 240        | 23.0       | 10.0       | 8          | 23         | 20                         | 200                   | 14.3                          |
|                                  | 15           | 176.5              | 285        | 240        | 23.0       | 10.0       | 8          | 23         | 20                         | 200                   | 15.3                          |
|                                  | 20           | 183.0              | 285        | 240        | 23.0       | 11.7       | 8          | 23         | 20                         | 200                   | 17.1                          |
|                                  | 25           | 191.0              | 285        | 240        | 23.0       | 11.7       | 8          | 23         | 20                         | 200                   | 18.7                          |
| 200                              | 5            | 221.0              | 340        | 295        | 24.5       | 11.0       | 8          | 23         | 20                         | 200                   | 19.7                          |
|                                  | 10           | 225.0              | 340        | 295        | 24.5       | 11.0       | 8          | 23         | 20                         | 200                   | 20.6                          |
|                                  | 15           | 233.5              | 340        | 295        | 24.5       | 11.0       | 8          | 23         | 20                         | 200                   | 22.7                          |
|                                  | 20           | 242.5              | 340        | 295        | 24.5       | 12.8       | 8          | 23         | 20                         | 200                   | 25.8                          |
|                                  | 25           | 253.5              | 340        | 295        | 24.5       | 12.8       | 8          | 23         | 20                         | 200                   | 28.7                          |
| 250                              | 5            | 271.0              | 395        | 350        | 26.0       | 12.0       | 12         | 23         | 20                         | 300                   | 32.8                          |
|                                  | 10           | 276.5              | 395        | 350        | 26.0       | 12.0       | 12         | 23         | 20                         | 300                   | 34.4                          |
|                                  | 15           | 284.5              | 395        | 350        | 26.0       | 12.0       | 12         | 23         | 20                         | 300                   | 36.8                          |
|                                  | 20           | 294.5              | 395        | 350        | 26.0       | 14.0       | 12         | 23         | 20                         | 300                   | 42.3                          |
|                                  | 25           | 305.5              | 395        | 350        | 26.0       | 14.0       | 12         | 23         | 20                         | 300                   | 45.8                          |
| 300                              | 5            | 322.5              | 445        | 400        | 27.5       | 13.0       | 12         | 23         | 20                         | 300                   | 41.5                          |
|                                  | 10           | 328.5              | 445        | 400        | 27.5       | 13.0       | 12         | 23         | 20                         | 300                   | 43.5                          |
|                                  | 15           | 340.5              | 445        | 400        | 27.5       | 13.0       | 12         | 23         | 20                         | 300                   | 47.8                          |
|                                  | 20           | 352.5              | 445        | 400        | 27.5       | 15.2       | 12         | 23         | 20                         | 300                   | 55.3                          |
|                                  | 25           | 366.5              | 445        | 400        | 27.5       | 15.2       | 12         | 23         | 20                         | 300                   | 60.7                          |
| 350                              | 5, 10        | 379.5              | 505        | 460        | 29.0       | 14.0       | 16         | 23         | 20                         | 300                   | 54.4                          |
|                                  | 15           | 392.0              | 505        | 460        | 29.0       | 14.0       | 16         | 23         | 20                         | 300                   | 59.5                          |
|                                  | 20           | 405.0              | 505        | 460        | 29.0       | 16.3       | 16         | 23         | 20                         | 300                   | 68.8                          |
|                                  | 25           | 419.0              | 505        | 460        | 29.0       | 17.9       | 16         | 23         | 20                         | 300                   | 77.5                          |

\*Radius  $r$  may have a value of 6 mm for DN up to 150, 8 mm for DN 150 to 350 and 10 mm for DN 350 to 600.

†Tolerance for outside dia of flange has not been specified but the minimum shall provide a sufficient bearing area for the nut or bolt head.

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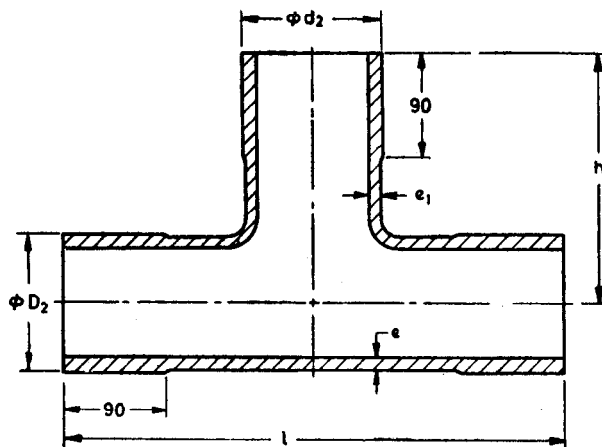
TABLE 8 DIMENSIONS AND MASS OF CAST IRON PLAIN-END FLANGED SPIGOTS — *Contd*

| NOMINAL DIAMETER DN | CLASS | NOMINAL DIMENSIONS |          |          |          |          | HOLES |     | DIA OF BOLTS | LENGTH <i>l</i> | NOMINAL MASS kg |
|---------------------|-------|--------------------|----------|----------|----------|----------|-------|-----|--------------|-----------------|-----------------|
|                     |       | $D_2$              | <i>D</i> | <i>C</i> | <i>b</i> | <i>e</i> | No.   | Dia |              |                 |                 |
| (1)                 | (2)   | (3)                | (4)      | (5)      | (6)      | (7)      | (8)   | (9) | (10)         | (11)            | (12)            |
| 400                 | 5, 10 | 432.0              | 565      | 515      | 30.0     | 15.0     | 16    | 28  | 24           | 300             | 66.5            |
|                     | 15    | 448.0              | 565      | 515      | 30.0     | 15.0     | 16    | 28  | 24           | 300             | 74.0            |
|                     | 20    | 463.0              | 565      | 515      | 30.0     | 17.5     | 16    | 28  | 24           | 300             | 85.8            |
|                     | 25    | 478.0              | 565      | 515      | 30.0     | 19.3     | 16    | 28  | 24           | 300             | 96.7            |
| 450                 | 5, 10 | 482.0              | 615      | 565      | 31.5     | 16.0     | 20    | 28  | 24           | 300             | 77.0            |
|                     | 15    | 498.0              | 615      | 565      | 31.5     | 16.0     | 20    | 28  | 24           | 300             | 85.3            |
|                     | 20    | 515.0              | 615      | 565      | 31.5     | 18.7     | 20    | 28  | 24           | 300             | 99.9            |
|                     | 25    | 532.0              | 615      | 565      | 31.5     | 20.6     | 20    | 28  | 24           | 300             | 113             |
| 500                 | 5, 10 | 536.5              | 670      | 620      | 33.0     | 17.0     | 20    | 28  | 24           | 300             | 92.5            |
|                     | 15    | 554.5              | 670      | 620      | 33.0     | 17.0     | 20    | 28  | 24           | 300             | 103             |
|                     | 20    | 572.5              | 670      | 620      | 33.0     | 19.8     | 20    | 28  | 24           | 300             | 120             |
|                     | 25    | 591.5              | 670      | 620      | 33.0     | 21.8     | 20    | 28  | 24           | 300             | 136             |
| 600                 | 5, 10 | 643.5              | 780      | 725      | 36.0     | 19.0     | 20    | 31  | 28           | 300             | 126             |
|                     | 15    | 665.5              | 780      | 725      | 36.0     | 19.0     | 20    | 31  | 28           | 300             | 141             |
|                     | 20    | 686.5              | 680      | 725      | 36.0     | 22.2     | 20    | 31  | 28           | 300             | 164             |
|                     | 25    | 710.5              | 780      | 725      | 36.0     | 24.4     | 20    | 31  | 28           | 300             | 188             |

TABLE 9 DIMENSIONS AND MASS OF CAST IRON PLAIN-END TEES

( Clause 6.1 )

All dimensions in millimetres.

 $D_2$  = machined outside diameter of asbestos-cement pressure pipe in main line. $d_2$  = machined outside diameter at the reducer end in branch line.

| NOMINAL DIAMETER |       | CLASS | FINISH OD  |              | BARREL THICKNESS |              | LENGTH        |                 | NOMINAL MASS kg |
|------------------|-------|-------|------------|--------------|------------------|--------------|---------------|-----------------|-----------------|
| DN               | $d_n$ |       | Main $D_2$ | Branch $d_2$ | Main <i>e</i>    | Branch $e_1$ | Main <i>l</i> | Branch <i>h</i> |                 |
| (1)              | (2)   | (3)   | (4)        | (5)          | (6)              | (7)          | (8)           | (9)             | (10)            |
| 80               | 80    | 5, 10 | 99.5       | 99.5         | 8.6              | 8.6          | 360           | 180             | 9.70            |
|                  |       | 15    | 99.5       | 99.5         | 8.6              | 8.6          | 360           | 180             | 9.70            |
|                  |       | 20    | 101.5      | 101.5        | 10.0             | 10.0         | 360           | 180             | 11.1            |
|                  |       | 25    | 106.5      | 106.5        | 10.0             | 10.0         | 360           | 180             | 12.8            |
| 100              | 80    | 5, 10 | 120.0      | 99.5         | 9.0              | 9.0          | 400           | 190             | 12.1            |
|                  |       | 15    | 121.0      | 99.5         | 9.0              | 9.0          | 400           | 190             | 12.6            |
|                  |       | 20    | 126.5      | 101.5        | 10.5             | 10.5         | 400           | 190             | 14.5            |
|                  |       | 25    | 132.5      | 106.5        | 10.5             | 10.5         | 400           | 190             | 16.4            |

( Continued )

TABLE 9 DIMENSIONS AND MASS OF CAST IRON PLAIN-END TEES — *Contd*

| NOMINAL DIAMETER |                       | CLASS | FINISH OD                     |                                 | BARREL THICKNESS |                                 | LENGTH           |                    | NOMINAL MASS<br>kg |
|------------------|-----------------------|-------|-------------------------------|---------------------------------|------------------|---------------------------------|------------------|--------------------|--------------------|
| DN<br>(1)        | d <sub>n</sub><br>(2) |       | Main<br>D <sub>2</sub><br>(4) | Branch<br>d <sub>2</sub><br>(5) | Main<br>e<br>(6) | Branch<br>e <sub>1</sub><br>(7) | Main<br>l<br>(8) | Branch<br>h<br>(9) |                    |
| 100              | 100                   | 5, 10 | 120.0                         | 120.0                           | 9                | 9                               | 400              | 200                | 13.5               |
|                  |                       | 15    | 121.0                         | 121.0                           | 9                | 9                               | 400              | 200                | 13.9               |
|                  |                       | 20    | 126.5                         | 126.5                           | 10.5             | 10.5                            | 400              | 200                | 17.2               |
|                  |                       | 25    | 132.5                         | 132.5                           | 10.5             | 10.5                            | 400              | 200                | 19.7               |
| 125              | 80                    | 5, 10 | 145.0                         | 99.5                            | 9.5              | 9.5                             | 450              | 202.5              | 15.7               |
|                  |                       | 15    | 147.0                         | 99.5                            | 9.5              | 9.5                             | 450              | 202.5              | 16.0               |
|                  |                       | 20    | 152.5                         | 101.5                           | 11.1             | 11.1                            | 450              | 202.5              | 19.0               |
|                  |                       | 25    | 159.5                         | 106.5                           | 11.1             | 11.1                            | 450              | 202.5              | 21.3               |
| 125              | 100                   | 5, 10 | 145.0                         | 120.0                           | 9.5              | 9.5                             | 450              | 212.5              | 17.1               |
|                  |                       | 15    | 147.0                         | 121.0                           | 9.5              | 9.5                             | 450              | 212.5              | 17.7               |
|                  |                       | 20    | 152.5                         | 126.5                           | 11.1             | 11.1                            | 450              | 212.5              | 22.6               |
|                  |                       | 25    | 159.5                         | 132.5                           | 11.1             | 11.1                            | 450              | 212.5              | 25.4               |
| 125              | 125                   | 5, 10 | 145.0                         | 145.0                           | 9.5              | 9.5                             | 450              | 225                | 18.9               |
|                  |                       | 15    | 147.0                         | 147.0                           | 9.5              | 9.5                             | 450              | 225                | 19.9               |
|                  |                       | 20    | 152.5                         | 152.5                           | 11.1             | 11.1                            | 450              | 225                | 24.4               |
|                  |                       | 25    | 159.5                         | 159.5                           | 11.1             | 11.1                            | 450              | 225                | 27.8               |
| 150              | 80                    | 5, 10 | 171.0                         | 99.5                            | 10.0             | 10.0                            | 500              | 215                | 22.2               |
|                  |                       | 15    | 176.5                         | 99.5                            | 10.0             | 10.0                            | 500              | 215                | 24.2               |
|                  |                       | 20    | 183.0                         | 101.5                           | 11.7             | 11.7                            | 500              | 115                | 29.3               |
|                  |                       | 25    | 191.0                         | 106.5                           | 11.7             | 11.7                            | 500              | 215                | 33.0               |
| 150              | 100                   | 5, 10 | 171.0                         | 120.0                           | 10.0             | 10.0                            | 500              | 225                | 23.1               |
|                  |                       | 15    | 176.5                         | 121.0                           | 10.0             | 10.0                            | 500              | 225                | 25.3               |
|                  |                       | 20    | 183.0                         | 126.5                           | 11.7             | 11.7                            | 500              | 225                | 31.0               |
|                  |                       | 25    | 191.0                         | 132.5                           | 11.7             | 11.7                            | 500              | 225                | 35.0               |
| 150              | 125                   | 5, 10 | 171.0                         | 145.0                           | 10.0             | 10.0                            | 500              | 237.5              | 24.4               |
|                  |                       | 15    | 176.5                         | 147.0                           | 10.0             | 10.0                            | 500              | 237.5              | 26.7               |
|                  |                       | 20    | 183.0                         | 152.5                           | 11.7             | 11.7                            | 500              | 237.5              | 32.7               |
|                  |                       | 25    | 191.0                         | 159.5                           | 11.7             | 11.7                            | 500              | 237.5              | 37.1               |
| 150              | 150                   | 5, 10 | 171.0                         | 171.0                           | 10.0             | 10.0                            | 500              | 250                | 26.0               |
|                  |                       | 15    | 176.5                         | 176.5                           | 10.0             | 10.0                            | 500              | 250                | 29.1               |
|                  |                       | 20    | 183.0                         | 183.0                           | 11.7             | 11.7                            | 500              | 250                | 35.6               |
|                  |                       | 25    | 191.0                         | 191.0                           | 11.7             | 11.7                            | 500              | 250                | 40.3               |
| 200              | 80                    | 5     | 221.0                         | 99.5                            | 11.0             | 11.0                            | 600              | 240                | 35.4               |
|                  |                       | 10    | 225.0                         | 99.5                            | 11.0             | 11.0                            | 600              | 240                | 37.3               |
|                  |                       | 15    | 233.5                         | 99.5                            | 11.0             | 11.0                            | 600              | 240                | 41.4               |
|                  |                       | 20    | 242.5                         | 101.5                           | 12.8             | 12.8                            | 600              | 240                | 50.4               |
|                  |                       | 25    | 253.5                         | 106.5                           | 12.8             | 12.8                            | 600              | 240                | 56.8               |
| 200              | 100                   | 5     | 221.0                         | 120.0                           | 11.0             | 11.0                            | 600              | 250                | 36.4               |
|                  |                       | 10    | 225.0                         | 120.0                           | 11.0             | 11.0                            | 600              | 250                | 38.3               |
|                  |                       | 15    | 233.5                         | 121.0                           | 11.0             | 11.0                            | 600              | 250                | 42.6               |
|                  |                       | 20    | 242.5                         | 126.5                           | 12.8             | 12.8                            | 600              | 250                | 52.2               |
|                  |                       | 25    | 253.5                         | 132.5                           | 12.8             | 12.8                            | 600              | 250                | 58.8               |
| 200              | 125                   | 5     | 221.0                         | 145.0                           | 11.0             | 11.0                            | 600              | 262.5              | 37.8               |
|                  |                       | 10    | 225.0                         | 145.0                           | 11.0             | 11.0                            | 600              | 262.5              | 39.7               |
|                  |                       | 15    | 233.5                         | 147.0                           | 11.0             | 11.0                            | 600              | 262.5              | 44.1               |
|                  |                       | 20    | 242.5                         | 152.5                           | 12.8             | 12.8                            | 600              | 262.5              | 54.0               |
|                  |                       | 25    | 253.5                         | 159.5                           | 12.8             | 12.8                            | 600              | 262.5              | 61.0               |
| 200              | 150                   | 5     | 221.0                         | 171.0                           | 11.0             | 11.0                            | 600              | 275                | 39.5               |
|                  |                       | 10    | 225.0                         | 171.0                           | 11.0             | 11.0                            | 600              | 275                | 41.4               |
|                  |                       | 15    | 233.5                         | 176.5                           | 11.0             | 11.0                            | 600              | 275                | 47.3               |
|                  |                       | 20    | 242.5                         | 183.0                           | 12.8             | 12.8                            | 600              | 272                | 57.0               |
|                  |                       | 25    | 253.5                         | 191.0                           | 12.8             | 12.8                            | 600              | 275                | 64.3               |
| 200              | 200                   | 5     | 221.0                         | 221.0                           | 11.0             | 11.0                            | 600              | 300                | 43.1               |
|                  |                       | 10    | 225.0                         | 225.0                           | 11.0             | 11.0                            | 600              | 300                | 45.9               |
|                  |                       | 15    | 233.5                         | 233.5                           | 11.0             | 11.0                            | 600              | 300                | 52.1               |
|                  |                       | 20    | 242.5                         | 242.5                           | 12.8             | 12.8                            | 600              | 300                | 64.0               |
|                  |                       | 25    | 253.5                         | 253.5                           | 12.8             | 12.8                            | 600              | 300                | 72.7               |
| 250              | 80                    | 5     | 271.0                         | 99.5                            | 12.0             | 11.1                            | 700              | 265                | 53.2               |
|                  |                       | 10    | 276.5                         | 99.5                            | 12.0             | 11.1                            | 700              | 265                | 56.4               |
|                  |                       | 15    | 284.5                         | 99.5                            | 12.0             | 11.1                            | 700              | 265                | 61.2               |
|                  |                       | 20    | 294.5                         | 101.5                           | 14.0             | 13.0                            | 700              | 265                | 74.6               |
|                  |                       | 25    | 305.5                         | 106.5                           | 14.0             | 13.0                            | 700              | 265                | 82.1               |

( *Continued* )

TABLE 9 DIMENSIONS AND MASS OF CAST IRON PLAIN-END TEES — *Contd*

| NOMINAL DIAMETER |       | CLASS | FINISH OD  |              | BARREL THICKNESS |              | LENGTH   |            | NOMINAL MASS kg |
|------------------|-------|-------|------------|--------------|------------------|--------------|----------|------------|-----------------|
| DN               | $d_n$ |       | Main $D_a$ | Branch $d_b$ | Main $e$         | Branch $e_1$ | Main $l$ | Branch $h$ |                 |
| (1)              | (2)   | (3)   | (4)        | (5)          | (6)              | (7)          | (8)      | (9)        | (10)            |
| 250              | 100   | 5     | 271.0      | 120.0        | 12.0             | 11.6         | 700      | 275        | 54.3            |
|                  |       | 10    | 276.5      | 120.0        | 12.0             | 11.6         | 700      | 275        | 57.5            |
|                  |       | 15    | 284.5      | 121.0        | 12.0             | 11.6         | 700      | 275        | 62.4            |
|                  |       | 20    | 294.5      | 126.5        | 14.0             | 13.5         | 700      | 275        | 76.4            |
|                  |       | 25    | 305.5      | 132.5        | 14.0             | 13.5         | 700      | 275        | 84.2            |
| 250              | 125   | 5     | 271.0      | 145.0        | 12.0             | 12.0         | 700      | 287.5      | 55.9            |
|                  |       | 10    | 276.5      | 145.0        | 12.0             | 12.0         | 700      | 287.5      | 59.1            |
|                  |       | 15    | 284.5      | 147.0        | 12.0             | 12.0         | 700      | 287.5      | 64.1            |
|                  |       | 20    | 294.5      | 152.5        | 14.0             | 14.0         | 700      | 287.5      | 78.4            |
|                  |       | 25    | 305.5      | 159.5        | 14.0             | 14.0         | 700      | 287.5      | 86.6            |
| 250              | 150   | 5     | 271.0      | 171.0        | 12.0             | 12.0         | 700      | 300        | 57.7            |
|                  |       | 10    | 276.5      | 171.0        | 12.0             | 12.0         | 700      | 300        | 60.8            |
|                  |       | 15    | 284.5      | 176.5        | 12.0             | 12.0         | 700      | 300        | 66.6            |
|                  |       | 20    | 294.5      | 183.0        | 14.0             | 14.0         | 700      | 300        | 81.5            |
|                  |       | 25    | 305.5      | 191.0        | 14.0             | 14.0         | 700      | 300        | 90.1            |
| 250              | 200   | 5     | 271.0      | 221.0        | 12.0             | 12.0         | 700      | 325        | 61.5            |
|                  |       | 10    | 276.5      | 225.0        | 12.0             | 12.0         | 700      | 325        | 65.6            |
|                  |       | 15    | 284.5      | 233.5        | 12.0             | 12.0         | 700      | 325        | 72.5            |
|                  |       | 20    | 294.5      | 242.5        | 14.0             | 14.0         | 700      | 325        | 88.8            |
|                  |       | 25    | 305.5      | 253.5        | 14.0             | 14.0         | 700      | 325        | 98.7            |
| 250              | 250   | 5     | 271.0      | 271.0        | 12.0             | 12.0         | 700      | 350        | 66.0            |
|                  |       | 10    | 276.5      | 276.5        | 12.0             | 12.0         | 700      | 350        | 70.8            |
|                  |       | 15    | 284.5      | 284.5        | 12.0             | 12.0         | 700      | 350        | 77.9            |
|                  |       | 20    | 294.5      | 294.5        | 14.0             | 14.0         | 700      | 350        | 95.7            |
|                  |       | 25    | 305.5      | 305.5        | 14.0             | 14.0         | 700      | 350        | 106             |
| 300              | 80    | 5     | 322.5      | 99.5         | 13.0             | 11.1         | 800      | 290        | 77.1            |
|                  |       | 10    | 328.5      | 99.5         | 13.0             | 11.1         | 800      | 290        | 81.6            |
|                  |       | 15    | 340.5      | 99.5         | 13.0             | 11.1         | 800      | 290        | 90.1            |
|                  |       | 20    | 352.5      | 101.5        | 15.2             | 13.0         | 800      | 290        | 110             |
|                  |       | 25    | 366.5      | 106.5        | 15.2             | 13.0         | 800      | 290        | 121             |
| 300              | 100   | 5     | 322.5      | 120.0        | 13.0             | 11.6         | 800      | 300        | 78.5            |
|                  |       | 10    | 328.5      | 120.0        | 13.0             | 11.6         | 800      | 300        | 82.7            |
|                  |       | 15    | 340.5      | 121.0        | 13.0             | 11.6         | 800      | 300        | 91.3            |
|                  |       | 20    | 352.5      | 126.5        | 15.2             | 13.5         | 800      | 300        | 112             |
|                  |       | 25    | 366.5      | 132.5        | 15.2             | 13.5         | 800      | 300        | 123             |
| 300              | 125   | 5     | 322.5      | 145.0        | 13.0             | 12.4         | 800      | 312.5      | 80.2            |
|                  |       | 10    | 328.5      | 145.0        | 13.0             | 12.4         | 800      | 312.5      | 84.3            |
|                  |       | 15    | 340.5      | 147.0        | 13.0             | 12.4         | 800      | 312.5      | 93.1            |
|                  |       | 20    | 352.5      | 152.5        | 15.2             | 14.5         | 800      | 312.5      | 114             |
|                  |       | 25    | 366.5      | 159.5        | 15.2             | 14.5         | 800      | 312.5      | 126             |
| 300              | 150   | 5     | 322.5      | 171.0        | 13.0             | 12.9         | 800      | 325        | 80.9            |
|                  |       | 10    | 328.5      | 171.0        | 13.0             | 12.9         | 800      | 325        | 85.1            |
|                  |       | 15    | 340.5      | 176.5        | 13.0             | 12.9         | 800      | 325        | 94.6            |
|                  |       | 20    | 352.5      | 183.0        | 15.2             | 15.0         | 800      | 325        | 116             |
|                  |       | 25    | 366.5      | 191.0        | 15.2             | 15.0         | 800      | 325        | 128             |
| 300              | 200   | 5     | 322.5      | 221.0        | 13.0             | 13.0         | 800      | 350        | 86.3            |
|                  |       | 10    | 328.5      | 225.0        | 13.0             | 13.0         | 800      | 350        | 91.4            |
|                  |       | 15    | 340.5      | 233.5        | 13.0             | 13.0         | 800      | 350        | 102             |
|                  |       | 20    | 352.5      | 242.5        | 15.2             | 15.2         | 800      | 350        | 125             |
|                  |       | 25    | 366.5      | 253.5        | 15.2             | 15.2         | 800      | 350        | 138             |
| 300              | 250   | 5     | 322.5      | 271.0        | 13.0             | 13.0         | 800      | 375        | 91.1            |
|                  |       | 10    | 328.5      | 276.5        | 13.0             | 13.0         | 800      | 375        | 96.8            |
|                  |       | 15    | 340.5      | 284.5        | 13.0             | 13.0         | 800      | 375        | 108             |
|                  |       | 20    | 352.5      | 294.5        | 15.2             | 15.2         | 800      | 375        | 132             |
|                  |       | 25    | 366.5      | 305.5        | 15.2             | 15.2         | 800      | 375        | 142             |
| 300              | 300   | 5     | 322.5      | 322.5        | 13.0             | 13.0         | 800      | 400        | 97.2            |
|                  |       | 10    | 328.5      | 328.5        | 13.0             | 13.0         | 800      | 400        | 103             |
|                  |       | 15    | 340.5      | 340.5        | 13.0             | 13.0         | 800      | 400        | 116             |
|                  |       | 20    | 352.5      | 352.5        | 15.2             | 15.2         | 800      | 400        | 143             |
|                  |       | 25    | 366.5      | 366.5        | 15.2             | 15.2         | 800      | 400        | 159             |

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TABLE 9 DIMENSIONS AND MASS OF CAST IRON PLAIN-END TEES — *Contd*

| NOMINAL DIAMETER |              | CLASS | FINISH OD            |                        | BARREL THICKNESS   |                        | LENGTH             |                      | NOMINAL MASS<br>kg |
|------------------|--------------|-------|----------------------|------------------------|--------------------|------------------------|--------------------|----------------------|--------------------|
| DN<br>(1)        | $d_n$<br>(2) |       | Main<br>$D_1$<br>(4) | Branch<br>$d_2$<br>(5) | Main<br>$e$<br>(6) | Branch<br>$e_1$<br>(7) | Main<br>$l$<br>(8) | Branch<br>$h$<br>(9) |                    |
| 350              | 200          | 5     | 379.5                | 221.0                  | 14.0               | 14.0                   | 900                | 375                  | 122                |
|                  |              | 10    | 379.5                | 225.0                  | 14.0               | 14.0                   | 900                | 375                  | 123                |
|                  |              | 15    | 392.0                | 233.5                  | 14.0               | 14.0                   | 900                | 375                  | 135                |
|                  |              | 20    | 405.0                | 242.5                  | 16.3               | 16.3                   | 900                | 375                  | 165                |
|                  |              | 25    | 419.0                | 253.5                  | 17.9               | 17.9                   | 900                | 375                  | 191                |
| 350              | 250          | 5     | 379.5                | 271.0                  | 14.0               | 14.0                   | 900                | 400                  | 127                |
|                  |              | 10    | 379.5                | 276.5                  | 14.0               | 14.0                   | 900                | 400                  | 129                |
|                  |              | 15    | 392.0                | 284.5                  | 14.0               | 14.0                   | 900                | 400                  | 141                |
|                  |              | 20    | 405.0                | 294.5                  | 16.3               | 16.3                   | 900                | 400                  | 172                |
|                  |              | 25    | 419.0                | 305.5                  | 17.9               | 17.9                   | 900                | 400                  | 200                |
| 350              | 300          | 5     | 379.5                | 322.5                  | 14.0               | 14.0                   | 900                | 425                  | 133                |
|                  |              | 10    | 379.5                | 328.5                  | 14.0               | 14.0                   | 900                | 425                  | 136                |
|                  |              | 15    | 392.0                | 340.5                  | 14.0               | 14.0                   | 900                | 425                  | 150                |
|                  |              | 20    | 405.0                | 352.5                  | 16.3               | 16.3                   | 900                | 425                  | 183                |
|                  |              | 25    | 419.0                | 366.5                  | 17.9               | 17.9                   | 900                | 425                  | 213                |
| 350              | 350          | 5     | 379.5                | 379.5                  | 14.0               | 14.0                   | 900                | 450                  | 143                |
|                  |              | 10    | 379.5                | 379.5                  | 14.0               | 14.0                   | 900                | 450                  | 143                |
|                  |              | 15    | 392.0                | 392.0                  | 14.0               | 14.0                   | 900                | 450                  | 158                |
|                  |              | 20    | 405.0                | 405.0                  | 16.3               | 16.3                   | 900                | 450                  | 194                |
|                  |              | 25    | 419.0                | 419.0                  | 17.9               | 17.9                   | 900                | 450                  | 225                |
| 400              | 200          | 5     | 432.0                | 221.0                  | 15.0               | 14.1                   | 1 000              | 400                  | 161                |
|                  |              | 10    | 432.0                | 225.0                  | 15.0               | 14.1                   | 1 000              | 400                  | 162                |
|                  |              | 15    | 448.0                | 233.5                  | 15.0               | 14.1                   | 1 000              | 400                  | 179                |
|                  |              | 20    | 463.0                | 242.5                  | 17.5               | 16.5                   | 1 000              | 400                  | 218                |
|                  |              | 25    | 478.0                | 253.5                  | 19.3               | 18.2                   | 1 000              | 400                  | 252                |
| 400              | 250          | 5     | 432.0                | 271.0                  | 15.0               | 15.0                   | 1 000              | 425                  | 167                |
|                  |              | 10    | 432.0                | 276.5                  | 15.0               | 15.0                   | 1 000              | 425                  | 169                |
|                  |              | 15    | 448.0                | 284.5                  | 15.0               | 15.0                   | 1 000              | 425                  | 186                |
|                  |              | 20    | 463.0                | 294.5                  | 17.5               | 17.5                   | 1 000              | 475                  | 227                |
|                  |              | 25    | 478.0                | 305.5                  | 19.3               | 19.3                   | 1 000              | 425                  | 260                |
| 400              | 300          | 5     | 432.0                | 322.5                  | 15.0               | 15.0                   | 1 000              | 450                  | 174                |
|                  |              | 10    | 432.0                | 328.5                  | 15.0               | 15.0                   | 1 000              | 450                  | 176                |
|                  |              | 15    | 448.0                | 340.5                  | 15.0               | 15.0                   | 1 000              | 450                  | 197                |
|                  |              | 20    | 463.0                | 352.5                  | 17.5               | 17.5                   | 1 000              | 450                  | 238                |
|                  |              | 25    | 478.0                | 366.5                  | 19.3               | 19.3                   | 1 000              | 450                  | 276                |
| 400              | 350          | 5, 10 | 432.0                | 379.5                  | 15.0               | 15.0                   | 1 000              | 475                  | 184                |
|                  |              | 15    | 448.0                | 392.0                  | 15.0               | 15.0                   | 1 000              | 475                  | 204                |
|                  |              | 20    | 463.0                | 405.0                  | 17.5               | 17.5                   | 1 000              | 475                  | 249                |
|                  |              | 25    | 478.0                | 419.0                  | 19.3               | 19.3                   | 1 000              | 475                  | 288                |
| 400              | 400          | 5, 10 | 432.0                | 432.0                  | 15.0               | 15.0                   | 1 000              | 500                  | 194                |
|                  |              | 15    | 448.0                | 448.0                  | 15.0               | 15.0                   | 1 000              | 500                  | 216                |
|                  |              | 20    | 463.0                | 463.0                  | 17.5               | 17.5                   | 1 000              | 500                  | 264                |
|                  |              | 25    | 478.0                | 478.0                  | 19.3               | 19.3                   | 1 000              | 500                  | 306                |
| 450              | 250          | 5     | 482.0                | 271.0                  | 16.0               | 15.4                   | 1 100              | 450                  | 212                |
|                  |              | 10    | 482.0                | 276.5                  | 16.0               | 15.4                   | 1 100              | 450                  | 214                |
|                  |              | 15    | 498.0                | 284.5                  | 16.0               | 15.4                   | 1 100              | 450                  | 233                |
|                  |              | 20    | 515.0                | 294.5                  | 18.7               | 18.0                   | 1 100              | 450                  | 285                |
|                  |              | 25    | 532.0                | 305.5                  | 20.6               | 19.8                   | 1 100              | 450                  | 329                |
| 450              | 300          | 5     | 482.0                | 322.5                  | 16.0               | 16.0                   | 1 100              | 475                  | 220                |
|                  |              | 10    | 482.0                | 328.5                  | 16.0               | 16.0                   | 1 100              | 475                  | 222                |
|                  |              | 15    | 498.0                | 340.5                  | 16.0               | 16.0                   | 1 100              | 475                  | 243                |
|                  |              | 20    | 515.0                | 352.5                  | 18.7               | 18.7                   | 1 100              | 475                  | 298                |
|                  |              | 25    | 532.0                | 366.5                  | 20.6               | 20.6                   | 1 100              | 475                  | 344                |
| 450              | 350          | 5, 10 | 482.0                | 379.5                  | 16.0               | 16.0                   | 1 100              | 500                  | 230                |
|                  |              | 15    | 498.0                | 392.0                  | 16.0               | 16.0                   | 1 100              | 500                  | 252                |
|                  |              | 20    | 515.0                | 405.0                  | 18.7               | 18.7                   | 1 100              | 500                  | 309                |
|                  |              | 25    | 532.0                | 419.0                  | 20.6               | 20.6                   | 1 100              | 500                  | 357                |
| 450              | 400          | 5, 10 | 482.0                | 432.0                  | 16.0               | 16.0                   | 1 100              | 525                  | 241                |
|                  |              | 15    | 498.0                | 448.0                  | 16.0               | 16.0                   | 1 100              | 525                  | 265                |
|                  |              | 20    | 515.0                | 463.0                  | 18.7               | 18.7                   | 1 100              | 525                  | 324                |
|                  |              | 25    | 532.0                | 478.0                  | 20.6               | 20.6                   | 1 100              | 525                  | 375                |

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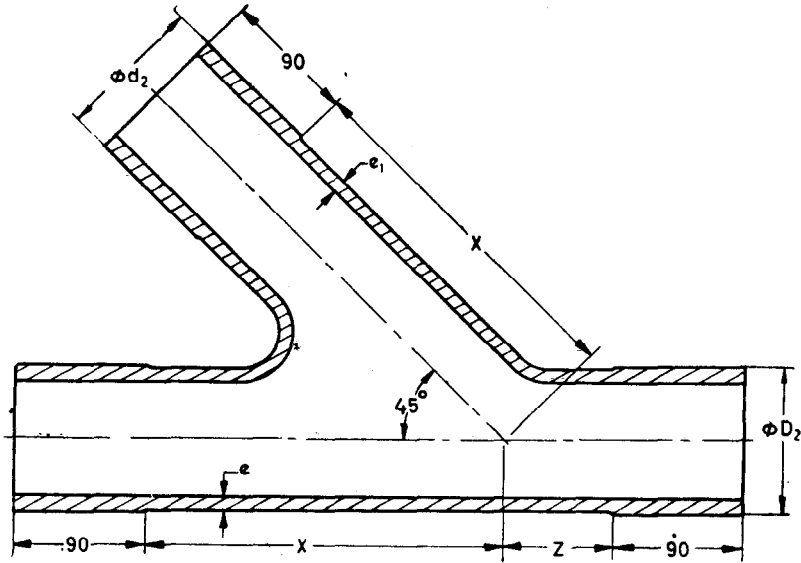
TABLE 9 DIMENSIONS AND MASS OF CAST IRON PLAIN-END TEES—Contd

| NOMINAL DIAMETER |              | CLASS | FINISH OD            |                        | BARREL THICKNESS   |                        | LENGTH             |                      | NOMINAL MASS kg |
|------------------|--------------|-------|----------------------|------------------------|--------------------|------------------------|--------------------|----------------------|-----------------|
| DN<br>(1)        | $d_n$<br>(2) |       | Main<br>$D_s$<br>(4) | Branch<br>$d_s$<br>(5) | Main<br>$e$<br>(6) | Branch<br>$e_1$<br>(7) | Main<br>$l$<br>(8) | Branch<br>$h$<br>(9) |                 |
| 450              | 450          | 5, 10 | 482.0                | 482.0                  | 16.0               | 16.0                   | 1 100              | 550                  | 251             |
|                  |              | 15    | 498.0                | 498.0                  | 16.0               | 16.0                   | 1 100              | 550                  | 276             |
|                  |              | 20    | 515.0                | 515.0                  | 18.7               | 18.7                   | 1 100              | 550                  | 339             |
|                  |              | 25    | 532.0                | 532.0                  | 20.6               | 20.6                   | 1 100              | 550                  | 392             |
| 500              | 250          | 5     | 536.5                | 271.0                  | 17.0               | 15.4                   | 1 200              | 475                  | 270             |
|                  |              | 10    | 536.5                | 276.5                  | 17.0               | 15.4                   | 1 200              | 475                  | 272             |
|                  |              | 15    | 554.5                | 284.5                  | 17.0               | 15.4                   | 1 200              | 475                  | 295             |
|                  |              | 20    | 572.5                | 294.5                  | 19.8               | 18.0                   | 1 200              | 475                  | 358             |
|                  |              | 25    | 591.5                | 305.5                  | 21.8               | 19.8                   | 1 200              | 475                  | 413             |
| 500              | 300          | 5     | 536.5                | 322.5                  | 17.0               | 16.7                   | 1 200              | 500                  | 279             |
|                  |              | 10    | 536.5                | 328.5                  | 17.0               | 16.7                   | 1 200              | 500                  | 281             |
|                  |              | 15    | 554.5                | 340.5                  | 17.0               | 16.7                   | 1 200              | 500                  | 306             |
|                  |              | 20    | 572.5                | 352.5                  | 19.8               | 19.5                   | 1 200              | 500                  | 372             |
|                  |              | 25    | 591.5                | 366.5                  | 21.8               | 21.5                   | 1 200              | 500                  | 429             |
| 500              | 350          | 5, 10 | 536.5                | 379.5                  | 17.0               | 17.0                   | 1 200              | 525                  | 290             |
|                  |              | 15    | 554.5                | 392.0                  | 17.0               | 17.0                   | 1 200              | 525                  | 316             |
|                  |              | 20    | 572.5                | 405.0                  | 19.8               | 19.8                   | 1 200              | 525                  | 384             |
|                  |              | 25    | 591.5                | 419.0                  | 21.8               | 21.8                   | 1 200              | 525                  | 443             |
| 500              | 400          | 5, 10 | 536.5                | 432.0                  | 17.0               | 17.0                   | 1 200              | 550                  | 301             |
|                  |              | 15    | 554.5                | 448.0                  | 17.0               | 17.0                   | 1 200              | 550                  | 329             |
|                  |              | 20    | 572.5                | 463.0                  | 19.8               | 19.8                   | 1 200              | 550                  | 400             |
|                  |              | 25    | 591.5                | 478.0                  | 21.8               | 21.8                   | 1 200              | 550                  | 462             |
| 500              | 450          | 5, 10 | 536.5                | 482.0                  | 17.0               | 17.0                   | 1 200              | 575                  | 312             |
|                  |              | 15    | 554.5                | 498.0                  | 17.0               | 17.0                   | 1 200              | 575                  | 341             |
|                  |              | 20    | 572.5                | 515.0                  | 19.8               | 19.8                   | 1 200              | 575                  | 415             |
|                  |              | 25    | 591.5                | 532.0                  | 21.8               | 21.8                   | 1 200              | 575                  | 480             |
| 500              | 500          | 5, 10 | 536.5                | 536.5                  | 17.0               | 17.0                   | 1 200              | 600                  | 326             |
|                  |              | 15    | 554.5                | 554.5                  | 17.0               | 17.0                   | 1 200              | 600                  | 357             |
|                  |              | 20    | 572.5                | 572.5                  | 19.8               | 19.8                   | 1 200              | 600                  | 435             |
|                  |              | 25    | 591.5                | 591.5                  | 21.8               | 21.8                   | 1 200              | 600                  | 502             |
| 600              | 300          | 5     | 643.5                | 322.5                  | 19.0               | 16.7                   | 1 400              | 550                  | 423             |
|                  |              | 10    | 643.5                | 328.5                  | 19.0               | 16.7                   | 1 400              | 550                  | 426             |
|                  |              | 15    | 665.5                | 340.5                  | 19.0               | 16.7                   | 1 400              | 550                  | 460             |
|                  |              | 20    | 686.5                | 352.5                  | 22.2               | 19.5                   | 1 400              | 550                  | 557             |
|                  |              | 25    | 710.5                | 366.5                  | 24.4               | 21.5                   | 1 400              | 550                  | 642             |
| 600              | 350          | 5, 10 | 643.5                | 379.5                  | 19.0               | 18.0                   | 1 400              | 575                  | 436             |
|                  |              | 15    | 665.5                | 392.0                  | 19.0               | 18.0                   | 1 400              | 575                  | 472             |
|                  |              | 20    | 686.5                | 405.0                  | 22.2               | 21.0                   | 1 400              | 575                  | 572             |
|                  |              | 25    | 710.5                | 419.0                  | 24.4               | 23.1                   | 1 400              | 575                  | 658             |
| 600              | 400          | 5, 10 | 643.5                | 432.0                  | 19.0               | 19.0                   | 1 400              | 600                  | 449             |
|                  |              | 15    | 665.5                | 448.0                  | 19.0               | 19.0                   | 1 400              | 600                  | 487             |
|                  |              | 20    | 686.5                | 463.0                  | 22.2               | 22.2                   | 1 400              | 600                  | 592             |
|                  |              | 25    | 710.5                | 478.0                  | 24.4               | 24.4                   | 1 400              | 600                  | 680             |
| 600              | 450          | 5, 10 | 643.5                | 482.0                  | 19.0               | 19.0                   | 1 400              | 625                  | 461             |
|                  |              | 15    | 665.5                | 498.0                  | 19.0               | 19.0                   | 1 400              | 625                  | 500             |
|                  |              | 20    | 686.5                | 515.0                  | 22.2               | 22.2                   | 1 400              | 625                  | 607             |
|                  |              | 25    | 710.5                | 532.0                  | 24.4               | 24.4                   | 1 400              | 625                  | 699             |
| 600              | 500          | 5, 10 | 643.5                | 536.5                  | 19.0               | 19.0                   | 1 400              | 650                  | 476             |
|                  |              | 15    | 665.5                | 554.5                  | 19.0               | 19.0                   | 1 400              | 650                  | 517             |
|                  |              | 20    | 686.5                | 572.5                  | 22.2               | 22.2                   | 1 400              | 650                  | 628             |
|                  |              | 25    | 710.5                | 591.5                  | 24.4               | 24.4                   | 1 400              | 650                  | 724             |
| 600              | 600          | 5, 10 | 643.5                | 643.5                  | 19.0               | 19.0                   | 1 400              | 700                  | 511             |
|                  |              | 15    | 665.5                | 665.5                  | 19.0               | 19.0                   | 1 400              | 700                  | 556             |
|                  |              | 20    | 686.5                | 686.5                  | 22.2               | 22.2                   | 1 400              | 700                  | 676             |
|                  |              | 25    | 710.5                | 710.5                  | 24.4               | 24.4                   | 1 400              | 700                  | 780             |

**TABLE 10 NOMINAL DIMENSIONS AND MASS OF CAST IRON PLAIN-END WYES**

( Clause 6.1 )

All dimensions in millimetres.



$D_2$  = machined outside diameter of asbestos-cement pressure pipe.  
 $d_2$  = machined outside diameter at the branch end.

| NOMINAL DIAMETER |              | CLASS     | FINISH OD  |              | BARREL THICKNESSES |              | DIMENSIONS |     | NOMINAL MASS KG |
|------------------|--------------|-----------|------------|--------------|--------------------|--------------|------------|-----|-----------------|
| Main DN          | Branch $d_n$ |           | Main $D_2$ | Branch $d_2$ | Main $e$           | Branch $e_1$ | $X$        | $Z$ |                 |
| (1)              | (2)          | (3)       | (4)        | (5)          | (6)                | (7)          | (8)        | (9) | (10)            |
| 80               | 80           | 5, 10, 15 | 99.5       | 99.5         | 8.6                | 8.6          | 250        | 75  | 14.7            |
|                  |              | 20        | 101.5      | 101.5        | 10.0               | 10.0         | 250        | 75  | 16.9            |
|                  |              | 25        | 106.5      | 106.5        | 10.0               | 10.0         | 250        | 75  | 18.6            |
| 100              | 80           | 5, 10     | 120.0      | 99.5         | 9.0                | 8.6          | 300        | 75  | 19.1            |
|                  |              | 15        | 121.0      | 99.5         | 9.0                | 8.6          | 300        | 75  | 19.4            |
|                  |              | 20        | 126.5      | 101.5        | 10.5               | 10.0         | 300        | 75  | 23.3            |
|                  |              | 25        | 132.5      | 106.5        | 10.5               | 10.0         | 300        | 75  | 25.5            |
| 100              | 100          | 5, 10     | 120.0      | 120.0        | 9.0                | 9.0          | 300        | 75  | 20.7            |
|                  |              | 15        | 121.0      | 121.0        | 9.0                | 9.0          | 300        | 75  | 21.1            |
|                  |              | 20        | 126.5      | 126.5        | 10.5               | 10.5         | 300        | 75  | 25.7            |
|                  |              | 25        | 132.5      | 132.5        | 10.5               | 10.5         | 300        | 75  | 28.2            |
| 125              | 80           | 5, 10     | 145.0      | 99.5         | 9.0                | 8.6          | 335        | 75  | 24.1            |
|                  |              | 15        | 147.0      | 99.5         | 9.5                | 8.6          | 335        | 75  | 24.8            |
|                  |              | 20        | 152.5      | 101.5        | 11.1               | 10.0         | 335        | 75  | 29.7            |
|                  |              | 25        | 159.5      | 106.5        | 11.1               | 10.0         | 335        | 75  | 32.6            |
| 125              | 100          | 5, 10     | 145.0      | 120.0        | 9.5                | 9.0          | 335        | 75  | 25.8            |
|                  |              | 15        | 147.0      | 121.0        | 9.5                | 9.0          | 335        | 75  | 26.6            |
|                  |              | 20        | 152.5      | 126.5        | 11.1               | 10.5         | 335        | 75  | 32.2            |
|                  |              | 25        | 159.5      | 132.5        | 11.1               | 10.5         | 335        | 75  | 35.4            |
| 125              | 125          | 5, 10     | 145.0      | 145.0        | 9.5                | 9.5          | 335        | 75  | 28.0            |
|                  |              | 15        | 147.0      | 147.0        | 9.5                | 9.5          | 335        | 75  | 28.9            |
|                  |              | 20        | 152.5      | 152.5        | 11.1               | 11.1         | 335        | 75  | 35.0            |
|                  |              | 25        | 159.5      | 159.5        | 11.1               | 11.1         | 335        | 75  | 38.5            |
| 150              | 80           | 5, 10     | 171.0      | 99.5         | 10.0               | 8.6          | 370        | 90  | 30.9            |
|                  |              | 15        | 176.5      | 99.5         | 10.0               | 8.6          | 370        | 90  | 32.9            |
|                  |              | 20        | 183.0      | 101.5        | 11.7               | 10.0         | 370        | 90  | 39.5            |
|                  |              | 25        | 191.0      | 106.5        | 11.7               | 10.0         | 370        | 90  | 43.3            |

( Continued )

TABLE 10 NOMINAL DIMENSIONS AND MASS OF CAST IRON PLAIN-END WYES — *Contd*

| NOMINAL DIAMETER |                       | CLASS | FINISH OD           |                       | BARREL THICKNESSES |                       | DIMENSIONS |     | NOMINAL MASS kg |
|------------------|-----------------------|-------|---------------------|-----------------------|--------------------|-----------------------|------------|-----|-----------------|
| Main DN          | Branch d <sub>n</sub> |       | Main D <sub>2</sub> | Branch d <sub>2</sub> | Main e             | Branch e <sub>1</sub> | X          | Z   |                 |
| (1)              | (2)                   | (3)   | (4)                 | (5)                   | (6)                | (7)                   | (8)        | (9) | (10)            |
| 150              | 100                   | 5, 10 | 171.0               | 120.0                 | 10.0               | 9.0                   | 370        | 90  | 32.6            |
|                  |                       | 15    | 176.5               | 121.0                 | 10.0               | 9.0                   | 370        | 90  | 34.8            |
|                  |                       | 20    | 183.0               | 126.5                 | 11.7               | 10.5                  | 370        | 90  | 44.0            |
|                  |                       | 25    | 191.0               | 132.5                 | 11.7               | 10.5                  | 370        | 90  | 48.0            |
| 150              | 125                   | 5, 10 | 171.0               | 145.0                 | 10.0               | 9.5                   | 370        | 90  | 34.9            |
|                  |                       | 15    | 176.5               | 147.5                 | 10.0               | 9.5                   | 370        | 90  | 37.3            |
|                  |                       | 20    | 183.0               | 152.5                 | 11.7               | 11.1                  | 370        | 90  | 45.1            |
|                  |                       | 25    | 191.0               | 159.5                 | 11.7               | 11.1                  | 370        | 90  | 49.4            |
| 150              | 150                   | 5, 10 | 171.0               | 171.0                 | 10.0               | 10.0                  | 370        | 90  | 37.5            |
|                  |                       | 15    | 176.5               | 176.5                 | 10.0               | 10.0                  | 370        | 90  | 40.6            |
|                  |                       | 20    | 183.0               | 183.0                 | 11.7               | 11.7                  | 370        | 90  | 49.1            |
|                  |                       | 25    | 191.0               | 191.0                 | 11.7               | 11.7                  | 370        | 90  | 53.8            |
| 200              | 80                    | 5     | 221.0               | 99.5                  | 11.0               | 8.6                   | 445        | 115 | 47.1            |
|                  |                       | 10    | 225.0               | 99.5                  | 11.0               | 8.6                   | 445        | 115 | 49.0            |
|                  |                       | 15    | 233.5               | 99.5                  | 11.0               | 8.6                   | 445        | 115 | 53.1            |
|                  |                       | 20    | 242.5               | 101.5                 | 12.8               | 10.0                  | 445        | 115 | 64.1            |
|                  |                       | 25    | 253.5               | 106.5                 | 12.8               | 10.0                  | 445        | 115 | 70.4            |
| 200              | 100                   | 5     | 221.0               | 120.0                 | 11.0               | 9.0                   | 445        | 115 | 49.1            |
|                  |                       | 10    | 225.0               | 120.0                 | 11.0               | 9.0                   | 445        | 115 | 50.9            |
|                  |                       | 15    | 233.5               | 121.0                 | 11.0               | 9.0                   | 445        | 115 | 55.2            |
|                  |                       | 20    | 242.5               | 126.5                 | 12.8               | 10.5                  | 445        | 115 | 67.0            |
|                  |                       | 25    | 253.5               | 132.5                 | 12.8               | 10.5                  | 445        | 115 | 73.6            |
| 200              | 125                   | 5     | 221.0               | 145.0                 | 11.0               | 9.5                   | 445        | 115 | 51.6            |
|                  |                       | 10    | 225.0               | 145.0                 | 11.0               | 9.5                   | 445        | 115 | 53.5            |
|                  |                       | 15    | 233.5               | 147.0                 | 11.0               | 9.5                   | 445        | 115 | 57.9            |
|                  |                       | 20    | 242.5               | 152.5                 | 12.8               | 11.1                  | 445        | 115 | 70.2            |
|                  |                       | 25    | 253.5               | 159.5                 | 12.8               | 11.1                  | 445        | 115 | 76.8            |
| 200              | 150                   | 5     | 221.0               | 171.0                 | 11.0               | 10.0                  | 445        | 115 | 54.5            |
|                  |                       | 10    | 225.0               | 171.0                 | 11.0               | 10.0                  | 445        | 115 | 56.4            |
|                  |                       | 15    | 233.5               | 176.5                 | 11.0               | 10.0                  | 445        | 115 | 61.6            |
|                  |                       | 20    | 242.5               | 183.0                 | 12.8               | 11.7                  | 445        | 115 | 74.5            |
|                  |                       | 25    | 253.5               | 191.0                 | 12.8               | 11.7                  | 445        | 115 | 81.9            |
| 200              | 200                   | 5     | 221.0               | 221.0                 | 11.0               | 11.0                  | 445        | 115 | 60.5            |
|                  |                       | 10    | 225.0               | 225.0                 | 11.0               | 11.0                  | 445        | 115 | 63.3            |
|                  |                       | 15    | 233.5               | 233.5                 | 11.0               | 11.0                  | 445        | 115 | 69.6            |
|                  |                       | 20    | 242.5               | 242.5                 | 12.8               | 12.8                  | 445        | 115 | 84.3            |
|                  |                       | 25    | 253.5               | 253.5                 | 12.8               | 12.8                  | 445        | 115 | 93.0            |
| 250              | 80                    | 5     | 271.0               | 99.5                  | 12.0               | 8.6                   | 520        | 125 | 67.2            |
|                  |                       | 10    | 276.5               | 99.5                  | 12.0               | 8.6                   | 520        | 125 | 70.4            |
|                  |                       | 15    | 284.5               | 99.5                  | 12.0               | 8.6                   | 520        | 125 | 75.1            |
|                  |                       | 20    | 294.5               | 101.5                 | 14.0               | 10.0                  | 520        | 125 | 90.9            |
|                  |                       | 25    | 305.5               | 106.5                 | 14.0               | 10.0                  | 520        | 125 | 98.5            |
| 250              | 100                   | 5     | 271.0               | 120.0                 | 12.0               | 9.0                   | 520        | 125 | 69.4            |
|                  |                       | 10    | 276.5               | 120.0                 | 12.0               | 9.0                   | 520        | 125 | 72.5            |
|                  |                       | 15    | 284.5               | 121.0                 | 12.0               | 9.0                   | 520        | 125 | 77.4            |
|                  |                       | 20    | 294.5               | 126.5                 | 14.0               | 10.5                  | 520        | 125 | 94.0            |
|                  |                       | 25    | 305.5               | 132.5                 | 14.0               | 10.5                  | 520        | 125 | 102             |
| 250              | 125                   | 5     | 271.0               | 145.0                 | 12.0               | 9.5                   | 520        | 125 | 72.2            |
|                  |                       | 10    | 276.5               | 145.0                 | 12.0               | 9.5                   | 520        | 125 | 75.4            |
|                  |                       | 15    | 284.5               | 147.0                 | 12.0               | 9.5                   | 520        | 125 | 80.4            |
|                  |                       | 20    | 294.5               | 152.5                 | 14.0               | 11.1                  | 520        | 125 | 97.5            |
|                  |                       | 25    | 305.5               | 159.5                 | 14.0               | 11.1                  | 520        | 125 | 106             |
| 250              | 150                   | 5     | 271.0               | 171.0                 | 12.0               | 10.0                  | 520        | 125 | 75.4            |
|                  |                       | 10    | 276.5               | 171.0                 | 12.0               | 10.0                  | 520        | 125 | 78.6            |
|                  |                       | 15    | 284.5               | 176.5                 | 12.0               | 10.0                  | 520        | 125 | 84.3            |
|                  |                       | 20    | 294.5               | 183.0                 | 14.0               | 11.7                  | 520        | 125 | 102             |
|                  |                       | 25    | 305.5               | 191.0                 | 14.0               | 11.7                  | 520        | 125 | 111             |
| 250              | 200                   | 5     | 271.0               | 221.0                 | 12.0               | 11.0                  | 520        | 125 | 82.0            |
|                  |                       | 10    | 276.5               | 225.0                 | 12.0               | 11.0                  | 520        | 125 | 86.2            |
|                  |                       | 15    | 284.5               | 233.5                 | 12.0               | 11.0                  | 520        | 125 | 93.0            |
|                  |                       | 20    | 294.5               | 242.5                 | 14.0               | 12.8                  | 520        | 125 | 113             |
|                  |                       | 25    | 305.5               | 253.5                 | 14.0               | 12.8                  | 520        | 125 | 123             |

(Continued)

TABLE 10 NOMINAL DIMENSIONS AND MASS OF CAST IRON PLAIN-END WYES — *Contd*

| NOMINAL DIAMETER |              | CLASS | FINISH OD  |              | BARREL THICKNESSES |              | DIMENSIONS |     | NOMINAL MASS kg |
|------------------|--------------|-------|------------|--------------|--------------------|--------------|------------|-----|-----------------|
| Main DN          | Branch $d_n$ |       | Main $D_1$ | Branch $d_2$ | Main $e$           | Branch $e_1$ | X          | Z   |                 |
| (1)              | (2)          | (3)   | (4)        | (5)          | (6)                | (7)          | (8)        | (9) | (10)            |
| 250              | 250          | 5     | 271.0      | 271.0        | 12.0               | 12.0         | 520        | 125 | 89.5            |
|                  |              | 10    | 276.5      | 276.5        | 12.0               | 12.0         | 520        | 125 | 94.3            |
|                  |              | 15    | 284.5      | 284.5        | 12.0               | 12.0         | 520        | 125 | 101             |
|                  |              | 20    | 294.5      | 294.5        | 14.0               | 14.0         | 520        | 125 | 123             |
|                  |              | 25    | 305.5      | 305.5        | 14.0               | 14.0         | 520        | 125 | 134             |
| 300              | 80           | 5     | 322.5      | 99.5         | 13.0               | 8.6          | 625        | 140 | 97.3            |
|                  |              | 10    | 328.5      | 99.5         | 13.0               | 8.6          | 625        | 140 | 101             |
|                  |              | 15    | 340.5      | 99.5         | 13.0               | 8.6          | 625        | 140 | 110             |
|                  |              | 20    | 352.5      | 101.5        | 15.2               | 10.0         | 625        | 140 | 133             |
|                  |              | 25    | 366.5      | 106.5        | 15.2               | 10.0         | 625        | 140 | 144             |
| 300              | 100          | 5     | 322.5      | 120.0        | 13.0               | 9.0          | 625        | 140 | 99.8            |
|                  |              | 10    | 328.5      | 120.0        | 13.0               | 9.0          | 625        | 140 | 104             |
|                  |              | 15    | 340.5      | 121.0        | 13.0               | 9.0          | 625        | 140 | 113             |
|                  |              | 20    | 352.5      | 126.5        | 15.2               | 10.5         | 625        | 140 | 137             |
|                  |              | 25    | 366.5      | 132.5        | 15.2               | 10.5         | 625        | 140 | 148             |
| 300              | 125          | 5     | 322.5      | 145.0        | 13.0               | 9.5          | 625        | 140 | 103             |
|                  |              | 10    | 328.5      | 145.0        | 13.0               | 9.5          | 625        | 140 | 107             |
|                  |              | 15    | 340.5      | 147.0        | 13.0               | 9.5          | 625        | 140 | 116             |
|                  |              | 20    | 352.5      | 152.5        | 15.2               | 11.1         | 625        | 140 | 141             |
|                  |              | 25    | 366.5      | 159.5        | 15.2               | 11.1         | 625        | 140 | 153             |
| 300              | 150          | 5     | 322.5      | 171.0        | 13.0               | 10.0         | 625        | 140 | 107             |
|                  |              | 10    | 328.5      | 171.0        | 13.0               | 10.0         | 625        | 140 | 111             |
|                  |              | 15    | 340.5      | 176.5        | 13.0               | 10.0         | 625        | 140 | 120             |
|                  |              | 20    | 352.5      | 183.0        | 15.2               | 11.7         | 625        | 140 | 146             |
|                  |              | 25    | 366.5      | 191.0        | 15.2               | 11.7         | 625        | 140 | 158             |
| 300              | 200          | 5     | 322.5      | 221.0        | 13.0               | 11.0         | 625        | 140 | 115             |
|                  |              | 10    | 328.5      | 225.0        | 13.0               | 11.0         | 625        | 140 | 120             |
|                  |              | 15    | 340.5      | 233.5        | 13.0               | 11.0         | 625        | 140 | 130             |
|                  |              | 20    | 352.5      | 242.5        | 15.2               | 12.8         | 625        | 140 | 158             |
|                  |              | 25    | 366.5      | 253.5        | 15.2               | 12.8         | 625        | 140 | 172             |
| 300              | 250          | 5     | 322.5      | 271.0        | 13.0               | 12.0         | 625        | 140 | 123             |
|                  |              | 10    | 328.5      | 276.5        | 13.0               | 12.0         | 625        | 140 | 129             |
|                  |              | 15    | 340.5      | 284.5        | 13.0               | 12.0         | 625        | 140 | 140             |
|                  |              | 20    | 352.5      | 294.5        | 15.2               | 14.0         | 625        | 140 | 170             |
|                  |              | 25    | 366.5      | 305.5        | 15.2               | 14.0         | 625        | 140 | 184             |
| 300              | 300          | 5     | 322.5      | 322.5        | 13.0               | 13.0         | 625        | 140 | 134             |
|                  |              | 10    | 328.5      | 328.5        | 13.0               | 13.0         | 625        | 140 | 140             |
|                  |              | 15    | 340.5      | 340.5        | 13.0               | 13.0         | 625        | 140 | 153             |
|                  |              | 20    | 352.5      | 352.5        | 15.2               | 15.2         | 625        | 140 | 185             |
|                  |              | 25    | 366.5      | 366.5        | 15.2               | 15.2         | 625        | 140 | 201             |
| 350              | 200          | 5     | 379.5      | 221.0        | 14.0               | 11.0         | 670        | 160 | 149             |
|                  |              | 10    | 379.5      | 225.0        | 14.0               | 11.0         | 670        | 160 | 150             |
|                  |              | 15    | 392.0      | 233.5        | 14.0               | 11.0         | 670        | 160 | 163             |
|                  |              | 20    | 405.0      | 242.5        | 16.3               | 12.8         | 670        | 160 | 197             |
|                  |              | 25    | 419.0      | 253.5        | 17.9               | 12.8         | 670        | 160 | 224             |
| 350              | 250          | 5     | 379.5      | 271.0        | 14.0               | 12.0         | 670        | 160 | 158             |
|                  |              | 10    | 379.5      | 276.5        | 14.0               | 12.0         | 670        | 160 | 160             |
|                  |              | 15    | 392.0      | 284.5        | 14.0               | 12.0         | 670        | 160 | 172             |
|                  |              | 20    | 405.0      | 294.5        | 16.3               | 14.0         | 670        | 160 | 209             |
|                  |              | 25    | 419.0      | 305.5        | 17.9               | 14.0         | 670        | 160 | 236             |
| 350              | 300          | 5     | 379.5      | 322.5        | 14.0               | 13.0         | 670        | 160 | 169             |
|                  |              | 10    | 379.5      | 328.5        | 14.0               | 13.0         | 670        | 160 | 171             |
|                  |              | 15    | 392.0      | 340.5        | 14.0               | 13.0         | 670        | 160 | 185             |
|                  |              | 20    | 405.0      | 352.5        | 16.3               | 15.2         | 670        | 160 | 224             |
|                  |              | 25    | 419.0      | 366.5        | 17.9               | 15.2         | 670        | 160 | 254             |
| 350              | 350          | 5, 10 | 379.5      | 379.5        | 14.0               | 14.0         | 670        | 160 | 182             |
|                  |              | 15    | 392.0      | 392.0        | 14.0               | 14.0         | 670        | 160 | 198             |
|                  |              | 20    | 405.0      | 405.0        | 16.3               | 16.3         | 670        | 160 | 239             |
|                  |              | 25    | 419.0      | 419.0        | 17.9               | 17.9         | 670        | 160 | 275             |

(Continued)



TABLE 10 NOMINAL DIMENSIONS AND MASS OF CAST IRON PLAIN-END WYES — *Contd*

| NOMINAL DIAMETER |              | CLASS | FINISH OD  |              | BARREL THICKNESSES |              | DIMENSIONS |     | NOMINAL MASS kg |
|------------------|--------------|-------|------------|--------------|--------------------|--------------|------------|-----|-----------------|
| Main DN          | Branch $d_n$ |       | Main $D_s$ | Branch $d_s$ | Main $e$           | Branch $e_1$ | X          | Z   |                 |
| (1)              | (2)          | (3)   | (4)        | (5)          | (6)                | (7)          | (8)        | (9) | (10)            |
| 400              | 200          | 5     | 432.0      | 221.0        | 15.0               | 11.0         | 740        | 175 | 191             |
|                  |              | 10    | 432.0      | 225.0        | 15.0               | 11.0         | 740        | 175 | 192             |
|                  |              | 15    | 448.0      | 233.5        | 15.0               | 11.0         | 740        | 175 | 209             |
|                  |              | 20    | 463.0      | 242.5        | 17.5               | 12.8         | 740        | 175 | 253             |
|                  |              | 25    | 478.0      | 253.5        | 19.3               | 12.8         | 740        | 175 | 288             |
| 400              | 250          | 5     | 432.0      | 271.0        | 15.0               | 12.0         | 740        | 175 | 201             |
|                  |              | 10    | 432.0      | 276.5        | 15.0               | 12.0         | 740        | 175 | 202             |
|                  |              | 15    | 448.0      | 284.5        | 15.0               | 12.0         | 740        | 175 | 220             |
|                  |              | 20    | 463.0      | 294.5        | 17.5               | 14.0         | 740        | 175 | 266             |
|                  |              | 25    | 478.0      | 305.5        | 19.3               | 14.0         | 740        | 175 | 301             |
| 400              | 300          | 5     | 432.0      | 322.5        | 15.0               | 13.0         | 740        | 175 | 212             |
|                  |              | 10    | 432.0      | 328.5        | 15.0               | 13.0         | 740        | 175 | 214             |
|                  |              | 15    | 448.0      | 340.5        | 15.0               | 13.0         | 740        | 175 | 233             |
|                  |              | 20    | 463.0      | 352.5        | 17.5               | 15.2         | 740        | 175 | 282             |
|                  |              | 25    | 478.0      | 366.5        | 19.3               | 15.2         | 740        | 175 | 320             |
| 400              | 350          | 5, 10 | 432.0      | 379.5        | 15.0               | 14.0         | 740        | 175 | 226             |
|                  |              | 15    | 448.0      | 392.0        | 15.0               | 14.0         | 740        | 175 | 247             |
|                  |              | 20    | 463.0      | 405.0        | 17.5               | 16.3         | 740        | 175 | 298             |
|                  |              | 25    | 478.0      | 419.0        | 19.3               | 17.9         | 740        | 175 | 342             |
| 400              | 400          | 5, 10 | 432.0      | 432.0        | 15.0               | 15.0         | 740        | 175 | 241             |
|                  |              | 15    | 448.0      | 448.0        | 15.0               | 15.0         | 740        | 175 | 263             |
|                  |              | 20    | 463.0      | 463.0        | 17.5               | 17.5         | 740        | 175 | 319             |
|                  |              | 25    | 478.0      | 478.0        | 19.3               | 19.3         | 740        | 175 | 366             |
| 450              | 250          | 5     | 482.0      | 271.0        | 16.0               | 15.4         | 820        | 190 | 251             |
|                  |              | 10    | 482.0      | 276.5        | 16.0               | 15.4         | 820        | 190 | 252             |
|                  |              | 15    | 498.0      | 284.5        | 16.0               | 15.4         | 820        | 190 | 271             |
|                  |              | 20    | 515.0      | 294.5        | 18.7               | 18.0         | 820        | 190 | 330             |
|                  |              | 25    | 532.0      | 305.5        | 20.6               | 19.8         | 820        | 190 | 374             |
| 450              | 300          | 5     | 482.0      | 322.5        | 16.0               | 13.0         | 820        | 190 | 263             |
|                  |              | 10    | 482.0      | 328.5        | 16.0               | 13.0         | 820        | 190 | 265             |
|                  |              | 15    | 498.0      | 340.5        | 16.0               | 13.0         | 820        | 190 | 286             |
|                  |              | 20    | 515.0      | 352.5        | 18.7               | 15.2         | 820        | 190 | 347             |
|                  |              | 25    | 532.0      | 366.5        | 20.6               | 15.2         | 820        | 190 | 394             |
| 450              | 350          | 5     | 482.0      | 379.5        | 16.0               | 14.0         | 820        | 190 | 278             |
|                  |              | 10    | 482.0      | 379.5        | 16.0               | 14.0         | 820        | 190 | 278             |
|                  |              | 15    | 498.0      | 392.0        | 16.0               | 14.0         | 820        | 190 | 300             |
|                  |              | 20    | 515.0      | 405.0        | 18.7               | 16.3         | 820        | 190 | 364             |
|                  |              | 25    | 532.0      | 419.0        | 20.6               | 17.9         | 820        | 190 | 418             |
| 450              | 400          | 5, 10 | 482.0      | 432.0        | 16.0               | 15.0         | 820        | 190 | 294             |
|                  |              | 15    | 498.0      | 448.0        | 16.0               | 15.0         | 820        | 190 | 318             |
|                  |              | 20    | 515.0      | 463.0        | 18.7               | 17.5         | 820        | 190 | 386             |
|                  |              | 25    | 532.0      | 478.0        | 20.6               | 19.3         | 820        | 190 | 443             |
| 450              | 450          | 5, 10 | 482.0      | 482.0        | 16.0               | 16.0         | 820        | 190 | 310             |
|                  |              | 15    | 498.0      | 498.0        | 16.0               | 16.0         | 820        | 190 | 334             |
|                  |              | 20    | 515.0      | 515.0        | 18.7               | 18.7         | 820        | 190 | 407             |
|                  |              | 25    | 532.0      | 532.0        | 20.6               | 20.6         | 820        | 190 | 467             |
| 500              | 250          | 5     | 536.5      | 271.0        | 17.0               | 15.4         | 900        | 210 | 315             |
|                  |              | 10    | 536.5      | 276.5        | 17.0               | 15.4         | 900        | 210 | 316             |
|                  |              | 15    | 554.5      | 284.5        | 17.0               | 15.4         | 900        | 210 | 340             |
|                  |              | 20    | 572.5      | 294.5        | 19.8               | 18.0         | 900        | 210 | 410             |
|                  |              | 25    | 591.5      | 305.5        | 21.8               | 19.8         | 900        | 210 | 465             |
| 500              | 300          | 5     | 536.5      | 322.5        | 17.0               | 13.0         | 900        | 210 | 328             |
|                  |              | 10    | 536.5      | 328.5        | 17.0               | 13.0         | 900        | 210 | 330             |
|                  |              | 15    | 554.5      | 340.5        | 17.0               | 13.0         | 900        | 210 | 355             |
|                  |              | 20    | 572.5      | 352.5        | 19.8               | 15.2         | 900        | 210 | 429             |
|                  |              | 25    | 591.5      | 366.5        | 21.8               | 15.2         | 900        | 210 | 486             |
| 500              | 350          | 5, 10 | 536.5      | 379.5        | 17.0               | 14.0         | 900        | 210 | 345             |
|                  |              | 15    | 554.5      | 392.0        | 17.0               | 14.0         | 900        | 210 | 370             |
|                  |              | 20    | 572.5      | 405.0        | 19.8               | 16.3         | 900        | 210 | 447             |
|                  |              | 25    | 591.5      | 419.0        | 21.8               | 17.9         | 900        | 210 | 512             |

(Continued)

TABLE 10 NOMINAL DIMENSIONS AND MASS OF CAST IRON PLAIN-END WYES — *Contd*

| NOMINAL DIAMETER |              | CLASS | FINISH OD  |              | BARREL THICKNESSES |              | DIMENSIONS |     | NOMINAL MASS kg |
|------------------|--------------|-------|------------|--------------|--------------------|--------------|------------|-----|-----------------|
| Main DN          | Branch $d_a$ |       | Main $D_2$ | Branch $d_1$ | Main $e$           | Branch $e_1$ | X          | Z   |                 |
| (1)              | (2)          | (3)   | (4)        | (5)          | (6)                | (7)          | (8)        | (9) | (10)            |
| 500              | 400          | 5, 10 | 536.5      | 432.0        | 17.0               | 15.0         | 900        | 210 | 361             |
|                  |              | 15    | 554.5      | 448.0        | 17.0               | 15.0         | 900        | 210 | 390             |
|                  |              | 20    | 572.5      | 463.0        | 19.8               | 17.5         | 900        | 210 | 470             |
|                  |              | 25    | 591.5      | 478.0        | 21.8               | 19.3         | 900        | 210 | 539             |
| 500              | 450          | 5, 10 | 536.5      | 482.0        | 17.0               | 16.0         | 900        | 210 | 376             |
|                  |              | 15    | 554.5      | 498.0        | 17.0               | 16.0         | 900        | 210 | 406             |
|                  |              | 20    | 572.5      | 515.0        | 19.8               | 18.7         | 900        | 210 | 493             |
|                  |              | 25    | 591.5      | 532.0        | 21.8               | 20.6         | 900        | 210 | 565             |
| 500              | 500          | 5, 10 | 536.5      | 536.5        | 17.0               | 17.0         | 900        | 210 | 399             |
|                  |              | 15    | 554.5      | 554.5        | 17.0               | 17.0         | 900        | 210 | 430             |
|                  |              | 20    | 572.5      | 572.5        | 19.8               | 19.8         | 900        | 210 | 519             |
|                  |              | 25    | 591.5      | 591.5        | 21.8               | 21.8         | 900        | 210 | 595             |
| 600              | 300          | 5     | 643.5      | 322.5        | 19.0               | 13.0         | 1040       | 240 | 477             |
|                  |              | 10    | 643.5      | 328.5        | 19.0               | 13.0         | 1040       | 240 | 479             |
|                  |              | 15    | 665.5      | 340.5        | 19.0               | 13.0         | 1040       | 240 | 514             |
|                  |              | 20    | 686.5      | 352.5        | 22.2               | 15.2         | 1040       | 240 | 620             |
|                  |              | 25    | 710.5      | 366.5        | 24.4               | 15.2         | 1040       | 240 | 703             |
| 600              | 350          | 5, 10 | 643.5      | 379.5        | 19.0               | 14.0         | 1040       | 240 | 495             |
|                  |              | 15    | 665.5      | 392.0        | 19.0               | 14.0         | 1040       | 240 | 530             |
|                  |              | 20    | 686.5      | 405.0        | 22.2               | 16.3         | 1040       | 240 | 640             |
|                  |              | 25    | 710.5      | 419.0        | 24.4               | 17.9         | 1040       | 240 | 732             |
| 600              | 400          | 5, 10 | 643.5      | 432.0        | 19.0               | 15.0         | 1040       | 240 | 513             |
|                  |              | 15    | 665.5      | 448.0        | 19.0               | 15.0         | 1040       | 240 | 551             |
|                  |              | 20    | 686.5      | 463.0        | 22.2               | 17.5         | 1040       | 240 | 665             |
|                  |              | 25    | 710.5      | 478.0        | 24.4               | 19.3         | 1040       | 240 | 761             |
| 600              | 450          | 5, 10 | 643.5      | 482.0        | 19.0               | 16.0         | 1040       | 240 | 532             |
|                  |              | 15    | 665.5      | 498.0        | 19.0               | 16.0         | 1040       | 240 | 571             |
|                  |              | 20    | 686.5      | 515.0        | 22.2               | 18.7         | 1040       | 240 | 689             |
|                  |              | 25    | 710.5      | 532.0        | 24.4               | 20.6         | 1040       | 240 | 790             |
| 600              | 500          | 5, 10 | 643.5      | 536.5        | 19.0               | 17.0         | 1040       | 240 | 555             |
|                  |              | 15    | 665.5      | 554.5        | 19.0               | 17.0         | 1040       | 240 | 596             |
|                  |              | 20    | 686.5      | 572.5        | 22.2               | 19.8         | 1040       | 240 | 718             |
|                  |              | 25    | 710.5      | 591.5        | 24.4               | 21.8         | 1040       | 240 | 823             |
| 600              | 600          | 5, 10 | 643.5      | 643.5        | 19.0               | 19.0         | 1040       | 240 | 605             |
|                  |              | 15    | 665.5      | 665.5        | 19.0               | 19.0         | 1040       | 240 | 651             |
|                  |              | 20    | 686.5      | 686.5        | 22.2               | 22.2         | 1040       | 240 | 785             |
|                  |              | 25    | 710.5      | 710.5        | 24.4               | 24.4         | 1040       | 240 | 900             |

8.6 In the case of castings ( wholly or partially coated ) which are imperfectly coated or where the coating does not set or conform to the quality specified above, the coating shall be removed and the castings recoated.

## 9. MARKING

9.1 Each special shall have cast stamped or indelibly painted on it the following :

- Manufacturer's name, initials or identification mark;
- Nominal diameter;

c) Class reference;

d) Last two digits of the year of manufacture; and

e) Any other mark, if required by the purchaser.

9.1.1 Marking may be done on the barrels of the specials.

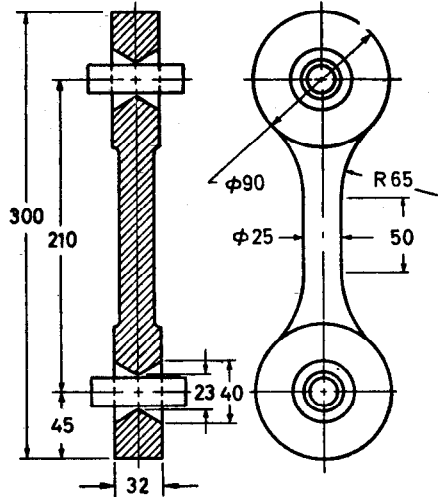
9.1.2 The material may also be marked with the Standard Mark. The details are available with the Bureau of Indian Standards.

## APPENDIX A

( Clause 4.1 )

## TEST BARS FOR TENSILE TEST ON CAST IRON SPECIALS CAST IN SAND MOULDS

The test bars for tensile tests shall be properly moulded free from defects. These may be either unmachined or machined to give a diameter of about 20 to 25 mm. The ends shall be selected by the manufacturer to fit the tensile testing machine. Figure 1 shows one satisfactory design.



All dimensions in millimetres.

FIG. 1 TENSILE TEST SPECIMEN

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